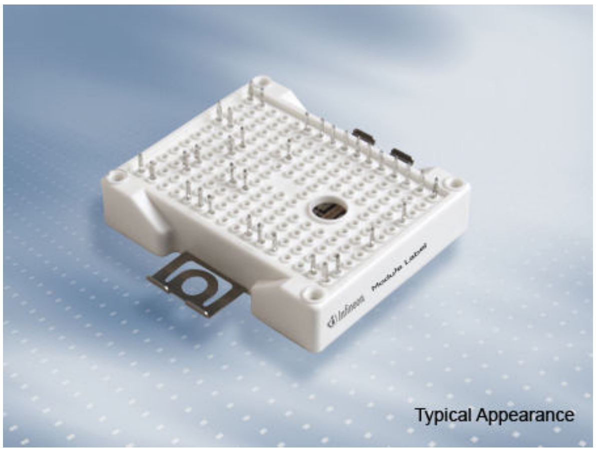
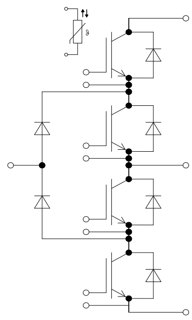
F3L200R07W2S5F_B11

EasyPACK™ Modul mit TRENCHSTOP™ 5 und CoolSiC™ Schottky Diode und PressFIT / NTC
EasyPACK™ module with TRENCHSTOP™ 5 and CoolSiC™ Schottky diode and PressFIT / NTC





V_{CES} = 650V
$I_{C\ nom}$ = 100A / I_{CRM} = 200A

Potentielle Anwendungen
- 3-Level-Applikationen
- Motorantriebe
- Solar Anwendungen
- USV-Systeme

Potential Applications
- 3-level-applications
- Motor drives
- Solar applications
- UPS systems

Elektrische Eigenschaften
- CoolSiC™ Schottky Diode Gen 5
- Erhöhte Sperrspannungsfestigkeit auf 650V
- Niedrige Schaltverluste

Electrical Features
- CoolSiC™ Schottky diode gen 5
- Increased blocking voltage capability up to 650V
- Low switching losses

Mechanische Eigenschaften
- Al_2O_3 Substrat mit kleinem thermischen Widerstand
- Kompaktes Design
- PressFIT Verbindungstechnik
- Robuste Montage durch integrierte Befestigungsklammern

Mechanical Features
- Al_2O_3 substrate with low thermal resistance
- Compact design
- PressFIT contact technology
- Rugged mounting due to integrated mounting clamps

Module Label Code

Barcode Code 128

Sample
0000012345600000000000

DMX - Code

Sample

Content of the Code	**Digit**
Module Serial Number	1 - 5
Module Material Number	6 - 11
Production Order Number	12 - 19
Datecode (Production Year)	20 - 21
Datecode (Production Week)	22 - 23

IGBT, T1 / T4 / IGBT, T1 / T4

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	650	V
Implementierter Kollektor-Strom Implemented collector current		I_{CN}	200	A
Kollektor-Dauergleichstrom Continuous DC collector current	T_H = 65°C, $T_{vj\,max}$ = 175°C	I_{CDC}	95	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	400	A
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	I_C = 100 A V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$V_{CE\,sat}$		1,17 1,20 1,21	1,38	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 2,00 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	3,25	4,00	4,75	V
Gateladung Gate charge	V_{GE} = -15 / 15 V, V_{CE} = 400 V		Q_G		0,84		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		0,0		Ω
Eingangskapazität Input capacitance	f = 100 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		14,3		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 100 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,05		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 650 V, V_{GE} = 0 V	T_{vj} = 25°C	I_{CES}			1,0	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 100 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Gon} = 20 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,on}$		0,097 0,087 0,082		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 100 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Gon} = 20 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_r		0,046 0,05 0,054		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 100 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Goff} = 39 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,off}$		0,654 0,687 0,704		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 100 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Goff} = 39 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_f		0,029 0,033 0,033		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 100 A, V_{CE} = 300 V, Lσ = 35 nH di/dt = 1800 A/µs (T_{vj} = 150°C) V_{GE} = -15 / 15 V, R_{Gon} = 20 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{on}		2,79 3,20 3,51		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 100 A, V_{CE} = 300 V, Lσ = 35 nH du/dt = 3700 V/µs (T_{vj} = 150°C) V_{GE} = -15 / 15 V, R_{Goff} = 39 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{off}		1,21 1,48 1,61		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 360 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 0 µs, T_{vj} = 150°C	I_{SC}		1600		A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT		R_{thJH}		0,814		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C

IGBT, T2 / T3 / IGBT, T2 / T3

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	650	V
Implementierter Kollektor-Strom Implemented collector current		I_{CN}	200	A
Kollektor-Dauergleichstrom Continuous DC collector current	T_H = 65°C, $T_{vj\,max}$ = 175°C	I_{CDC}	95	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	400	A
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	I_C = 100 A V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$V_{CE\,sat}$		1,17 1,20 1,21	1,38	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 2,00 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	3,25	4,00	4,75	V
Gateladung Gate charge	V_{GE} = -15 / 15 V, V_{CE} = 400 V		Q_G		0,84		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		0,0		Ω
Eingangskapazität Input capacitance	f = 100 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		14,3		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 100 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,05		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 650 V, V_{GE} = 0 V	T_{vj} = 25°C	I_{CES}			0,044	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 100 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Gon} = 20 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,on}$		0,098 0,087 0,085		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 100 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Gon} = 20 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_r		0,037 0,043 0,046		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 100 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Goff} = 39 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,off}$		0,651 0,685 0,695		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 100 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Goff} = 39 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_f		0,018 0,024 0,026		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 100 A, V_{CE} = 300 V, Lσ = 35 nH di/dt = 2200 A/µs (T_{vj} = 150°C) V_{GE} = -15 / 15 V, R_{Gon} = 20 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{on}		2,18 2,56 2,79		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 100 A, V_{CE} = 300 V, Lσ = 35 nH du/dt = 3500 V/µs (T_{vj} = 150°C) V_{GE} = -15 / 15 V, R_{Goff} = 39 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{off}		1,28 1,65 1,80		mJ mJ mJ
Kurzschlußverhalten SC data	$V_{GE} \leq$ 15 V, V_{CC} = 360 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	$t_P \leq$ 0 µs, T_{vj} = 150°C	I_{SC}		1600		A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT		R_{thJH}		0,814		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C

Diode, D1 / D4 / Diode, D1 / D4

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	650	V
Implementierter Durchlassstrom Implemented forward current		I_{FN}	120	A
Dauergleichstrom Continuous DC forward current		I_F	100	A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}	240	A
Grenzlastintegral I^2t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 150°C	I^2t	700 690	A²s A²s

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 100 A, V_{GE} = 0 V I_F = 100 A, V_{GE} = 0 V I_F = 100 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	V_F		1,38 1,49 1,52	1,65	V V V
Rückstromspitze Peak reverse recovery current	I_F = 100 A, - di_F/dt = 1800 A/µs (T_{vj}=150°C) V_R = 300 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	I_{RM}		58,3 74,4 77,6		A A A
Sperrverzögerungsladung Recovered charge	I_F = 100 A, - di_F/dt = 1800 A/µs (T_{vj}=150°C) V_R = 300 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	Q_r		3,10 5,40 5,50		µC µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 100 A, - di_F/dt = 1800 A/µs (T_{vj}=150°C) V_R = 300 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{rec}		0,50 0,57 0,69		mJ mJ mJ
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro Diode / per diode		R_{thJH}		1,15		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\ op}$	-40		150	°C

Diode, D2 / D3 / Diode, D2 / D3

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	650	V
Implementierter Durchlassstrom Implemented forward current		I_{FN}	150	A
Dauergleichstrom Continuous DC forward current		I_F	100	A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}	300	A
Grenzlastintegral I^2t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 150°C	I^2t	770 690	A²s A²s

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 100 A, V_{GE} = 0 V I_F = 100 A, V_{GE} = 0 V I_F = 100 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	V_F		1,33 1,29 1,26	1,55	V V V
Rückstromspitze Peak reverse recovery current	I_F = 100 A, - di_F/dt = 2200 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	I_{RM}		47,6 49,8 52,7		A A A
Sperrverzögerungsladung Recovered charge	I_F = 100 A, - di_F/dt = 2200 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	Q_r		1,90 2,00 2,10		µC µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 100 A, - di_F/dt = 2200 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{rec}		0,527 0,965 1,11		mJ mJ mJ
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro Diode / per diode		R_{thJH}		0,953		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\ op}$	-40		150	°C

Diode, D5-D6 / Diode, D5-D6

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	650	V
Implementierter Durchlassstrom Implemented forward current		I_{FN}	120	A
Dauergleichstrom Continuous DC forward current		I_F	100	A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}	240	A
Grenzlastintegral I^2t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 150°C	I^2t	700 690	A^2s A^2s

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 100 A, V_{GE} = 0 V I_F = 100 A, V_{GE} = 0 V I_F = 100 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	V_F		1,38 1,49 1,52	1,65	V V V
Rückstromspitze Peak reverse recovery current	I_F = 100 A, - di_F/dt = 1800 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	I_{RM}		58,3 74,4 77,6		A A A
Sperrverzögerungsladung Recovered charge	I_F = 100 A, - di_F/dt = 1800 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	Q_r		3,10 5,40 5,50		µC µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 100 A, - di_F/dt = 1800 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{rec}		0,50 0,57 0,69		mJ mJ mJ
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro Diode / per diode		R_{thJH}		1,15		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C

NTC-Widerstand / NTC-Thermistor

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Nennwiderstand Rated resistance	T_{NTC} = 25°C	R_{25}		5,00		kΩ
Abweichung von R100 Deviation of R100	T_{NTC} = 100°C, R_{100} = 493 Ω	$\Delta R/R$	-5		5	%
Verlustleistung Power dissipation	T_{NTC} = 25°C	P_{25}			20,0	mW
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298,15\ K))]$	$B_{25/50}$		3375		K
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/80}(1/T_2 - 1/(298,15\ K))]$	$B_{25/80}$		3411		K
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/100}(1/T_2 - 1/(298,15\ K))]$	$B_{25/100}$		3433		K

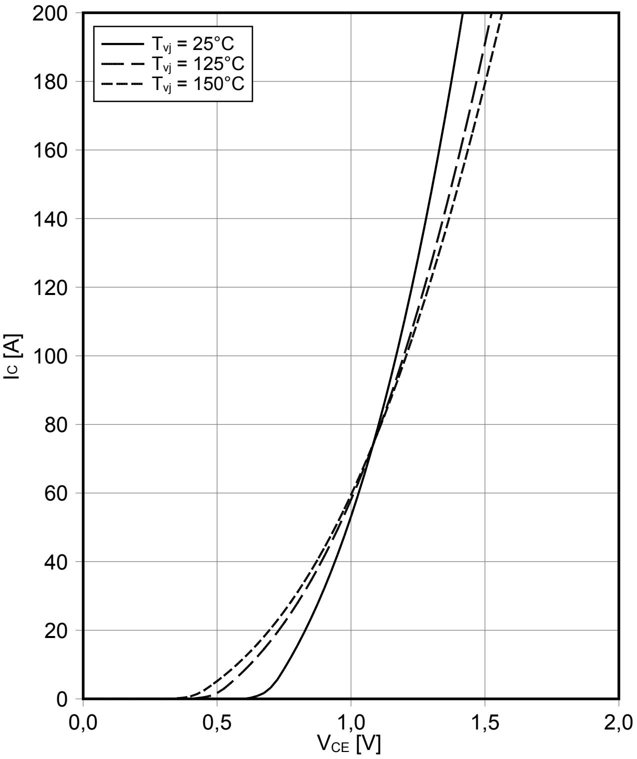
Angaben gemäß gültiger Application Note.
Specification according to the valid application note.

Modul / Module

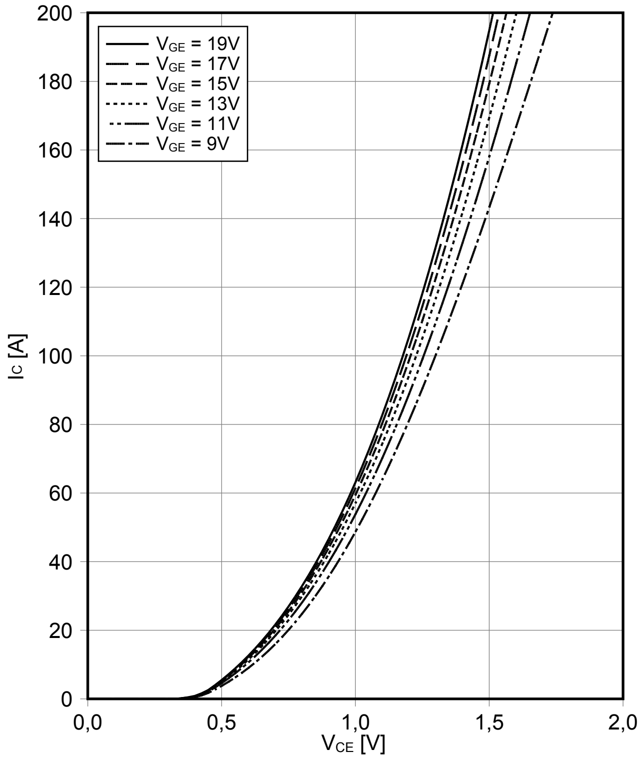
Isolations-Prüfspannung Isolation test voltage	RMS, f = 50 Hz, t = 1 min.	V_{ISOL}		2,5		kV
Innere Isolation Internal isolation	Basisisolierung (Schutzklasse 1, EN61140) basic insulation (class 1, IEC 61140)			Al_2O_3		
Kriechstrecke Creepage distance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			11,5 6,3		mm
Luftstrecke Clearance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			10,0 5,0		mm
Vergleichszahl der Kriechwegbildung Comperative tracking index		CTI		> 200		
Relativer Temperaturindex (elektr.) RTI Elec.	Gehäuse housing	RTI		140		°C
			min.	typ.	max.	
Modulstreuinduktivität Stray inductance module		L_{sCE}		20		nH
Lagertemperatur Storage temperature		T_{stg}	-40		125	°C
Anpresskraft für mech. Bef. pro Feder mountig force per clamp		F	40	-	80	N
Gewicht Weight		G		39		g

Der Strom im Dauerbetrieb ist auf 25A effektiv pro Anschlusspin begrenzt.
The current under continuous operation is limited to 25A rms per connector pin.

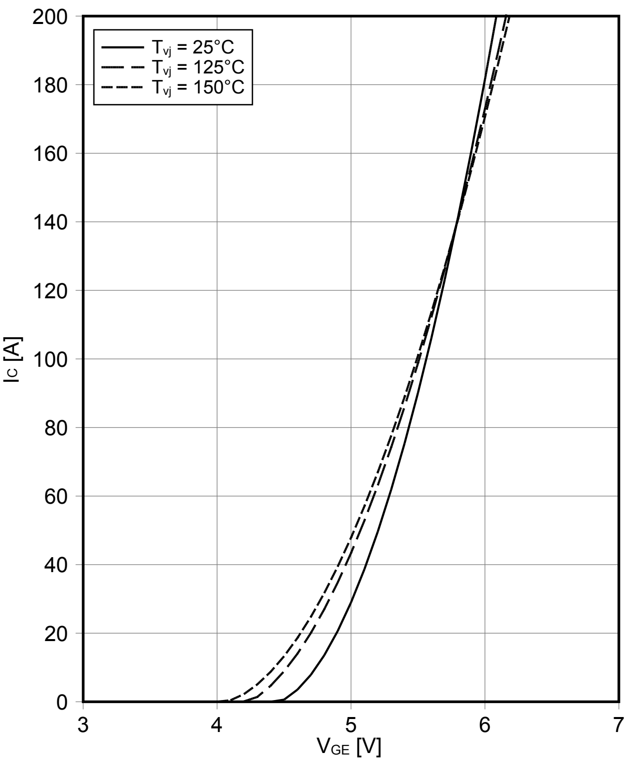
Ausgangskennlinie IGBT, T1 / T4 (typisch)
output characteristic IGBT, T1 / T4 (typical)
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



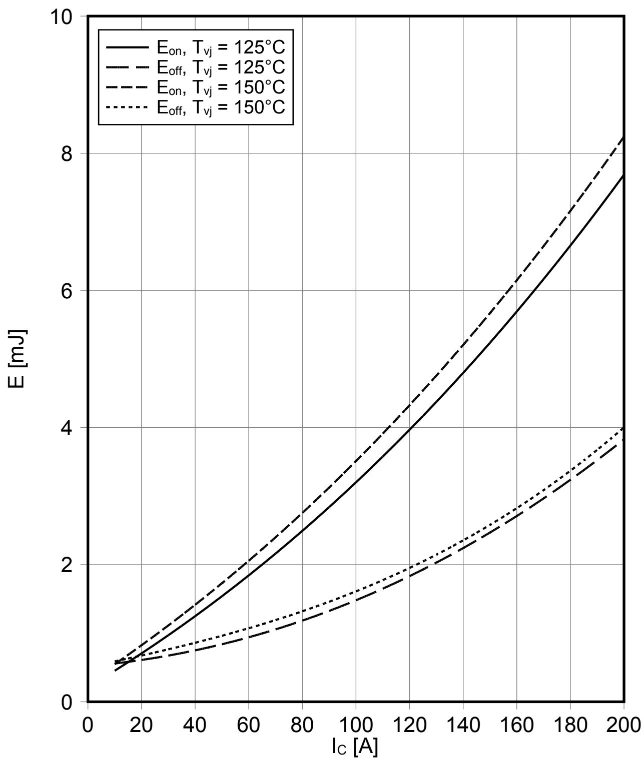
Ausgangskennlinienfeld IGBT, T1 / T4 (typisch)
output characteristic IGBT, T1 / T4 (typical)
$I_C = f(V_{CE})$
$T_{vj} = 150°C$



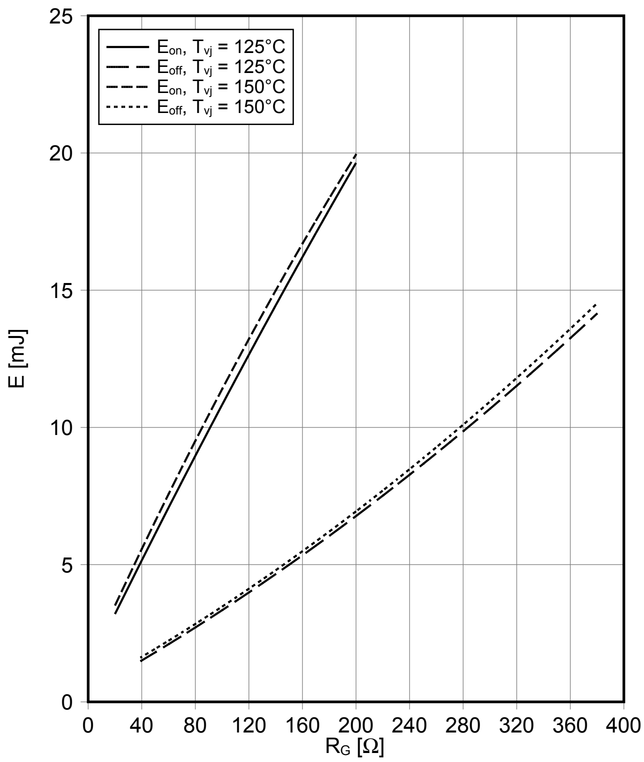
Übertragungscharakteristik IGBT, T1 / T4 (typisch)
transfer characteristic IGBT, T1 / T4 (typical)
$I_C = f(V_{GE})$
$V_{CE} = 20$ V



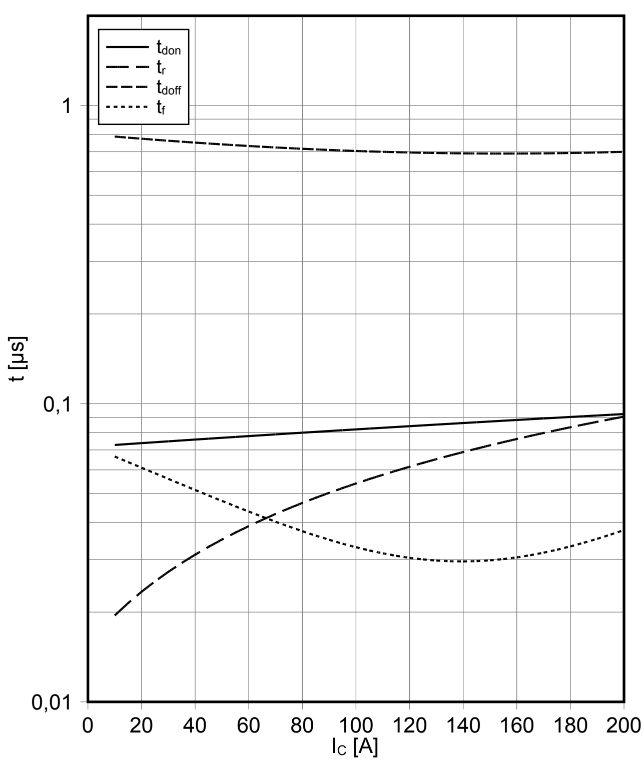
Schaltverluste IGBT, T1 / T4 (typisch)
switching losses IGBT, T1 / T4 (typical)
$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
$V_{GE} = ±15$ V, $R_{Gon} = 20$ Ω, $R_{Goff} = 39$ Ω, $V_{CE} = 300$ V



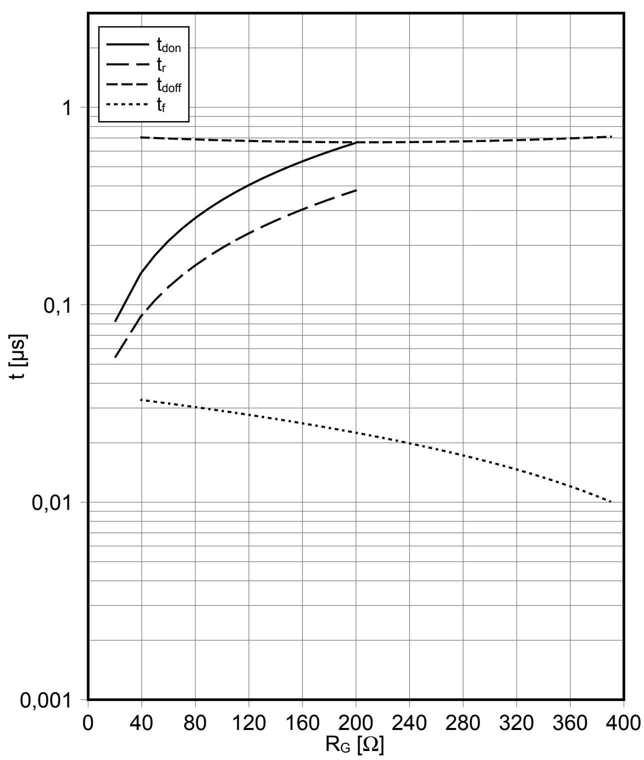
Schaltverluste IGBT, T1 / T4 (typisch)
switching losses IGBT, T1 / T4 (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
$V_{GE} = \pm 15$ V, $I_C = 100$ A, $V_{CE} = 300$ V



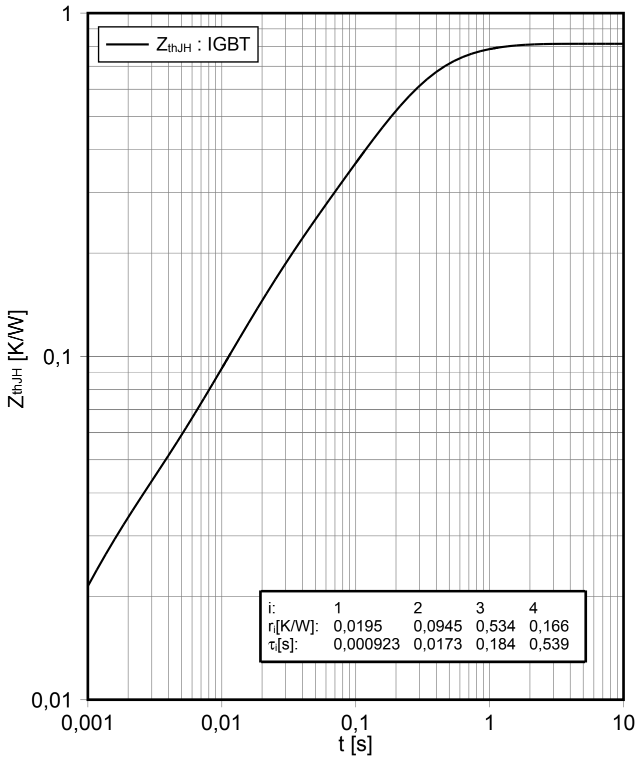
Schaltzeiten IGBT, T1 / T4 (typisch)
switching times IGBT, T1 / T4 (typical)
$t_{don} = f(I_C)$, $t_r = f(I_C)$, $t_{doff} = f(I_C)$, $t_f = f(I_C)$
$V_{GE} = \pm 15$ V, $R_{Gon} = 20\ \Omega$, $R_{Goff} = 39\ \Omega$, $V_{CE} = 300$ V, Tvj = 150°C



Schaltzeiten IGBT, T1 / T4 (typisch)
switching times IGBT, T1 / T4 (typical)
$t_{don} = f(R_G)$, $t_r = f(R_G)$, $t_{doff} = f(R_G)$, $t_f = f(R_G)$
$V_{GE} = \pm 15$ V, $I_C = 100$ A, $V_{CE} = 300$ V, Tvj = 150°C

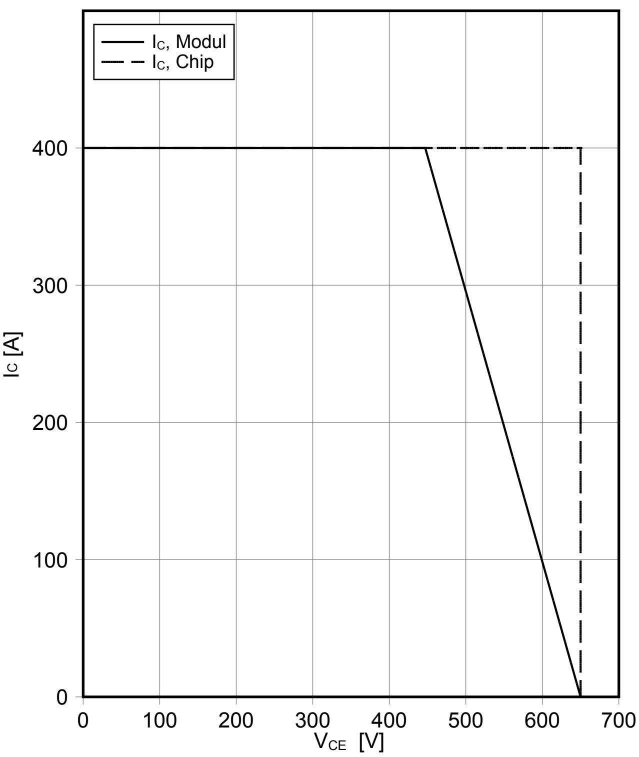


Transienter Wärmewiderstand IGBT, T1 / T4
transient thermal impedance IGBT, T1 / T4
$Z_{thJH} = f(t)$

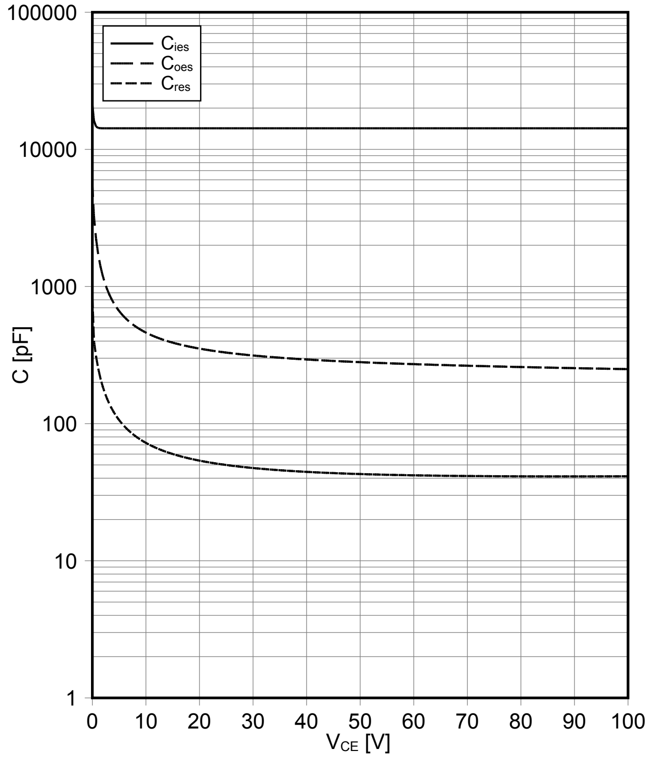


i:	1	2	3	4
r_i[K/W]:	0,0195	0,0945	0,534	0,166
τ_i[s]:	0,000923	0,0173	0,184	0,539

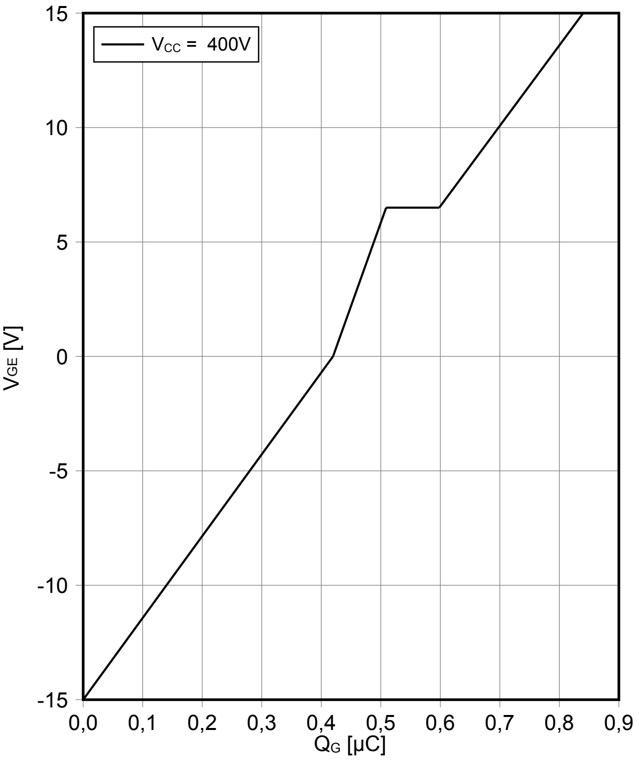
Sicherer Rückwärts-Arbeitsbereich IGBT, T1 / T4 (RBSOA)
reverse bias safe operating area IGBT, T1 / T4 (RBSOA)
$I_C = f(V_{CE})$
$V_{GE} = \pm 15$ V, $R_{Goff} = 39\ \Omega$, $T_{vj} = 150°C$



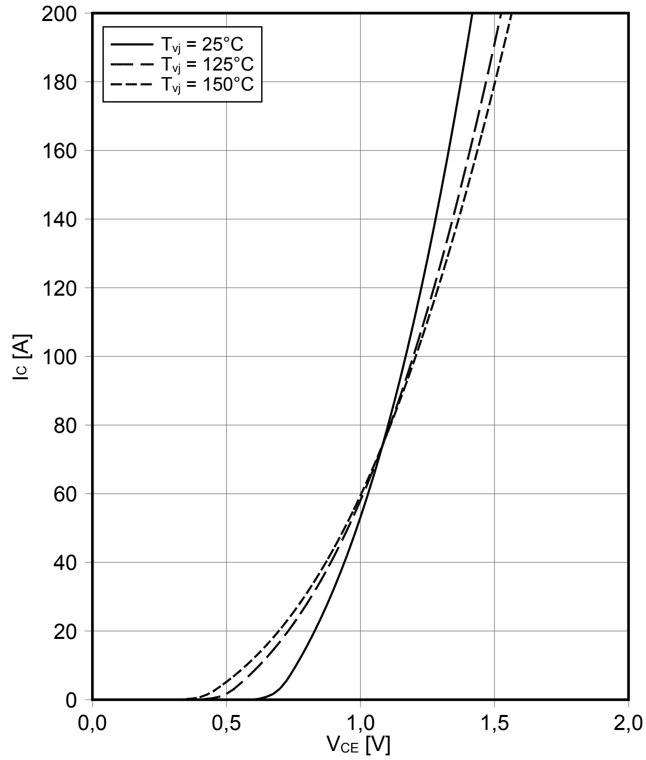
Kapazitäts Charakteristik IGBT, T1 / T4 (typisch)
capacity characteristic IGBT, T1 / T4 (typical)
$C = f(V_{CE})$
$V_{GE} = 0$ V, $T_{vj} = 25°C$, f = 100kHz



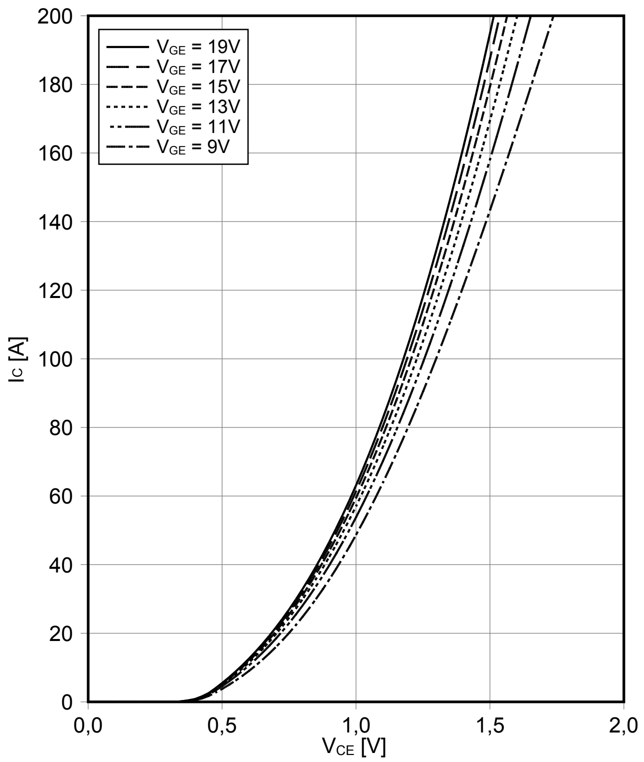
Gateladungs Charakteristik IGBT, T1 / T4 (typisch)
gate charge characteristic IGBT, T1 / T4 (typical)
$V_{GE} = f(Q_G)$
$I_C = 200$ A, $T_{vj} = 25°C$



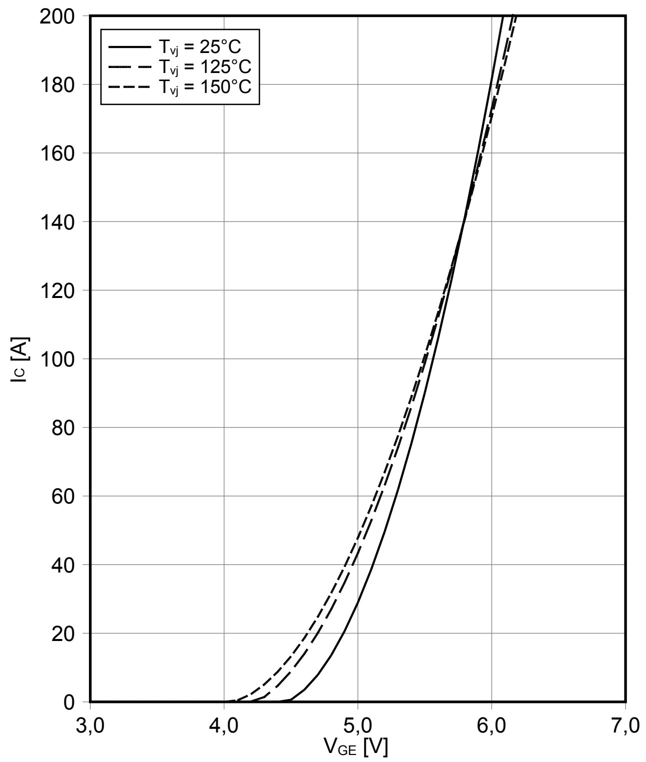
Ausgangskennlinie IGBT, T2 / T3 (typisch)
output characteristic IGBT, T2 / T3 (typical)
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



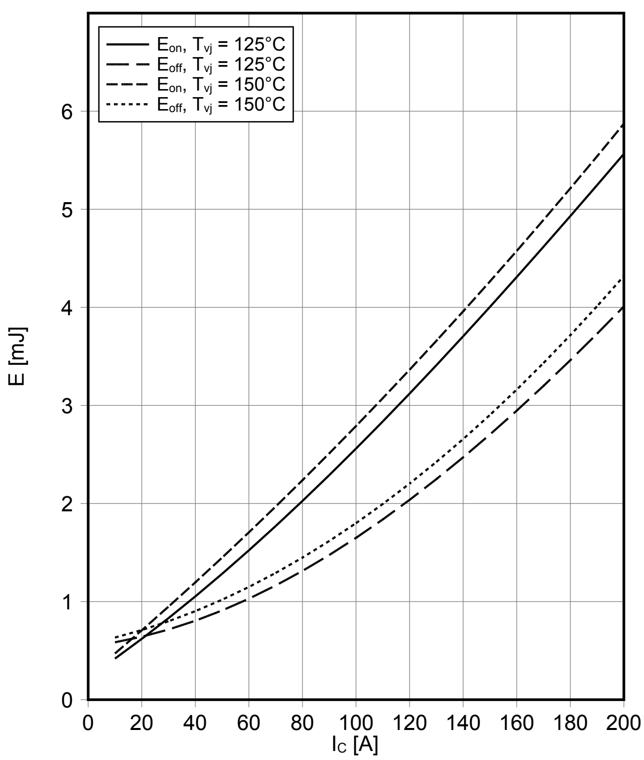
Ausgangskennlinienfeld IGBT, T2 / T3 (typisch)
output characteristic IGBT, T2 / T3 (typical)
$I_C = f(V_{CE})$
$T_{vj} = 150°C$



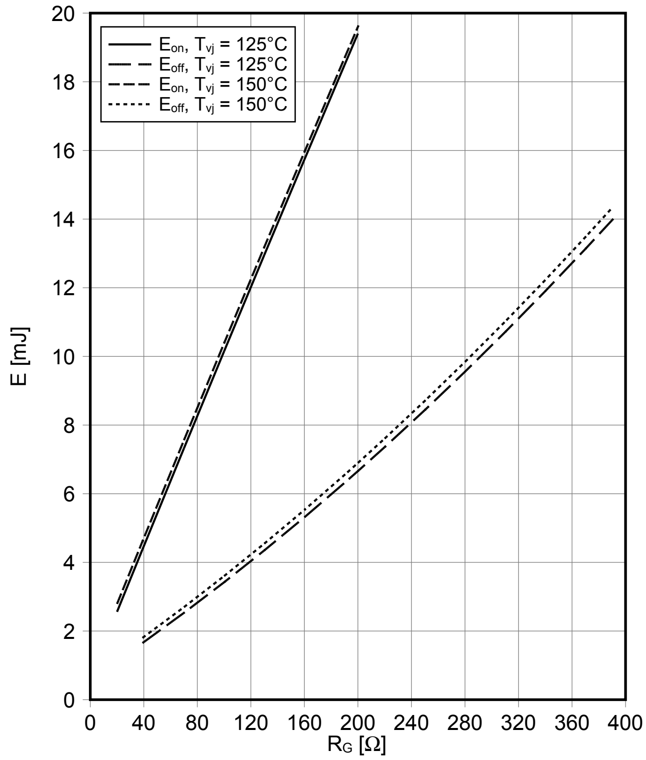
Übertragungscharakteristik IGBT, T2 / T3 (typisch)
transfer characteristic IGBT, T2 / T3 (typical)
$I_C = f(V_{GE})$
$V_{CE} = 20$ V



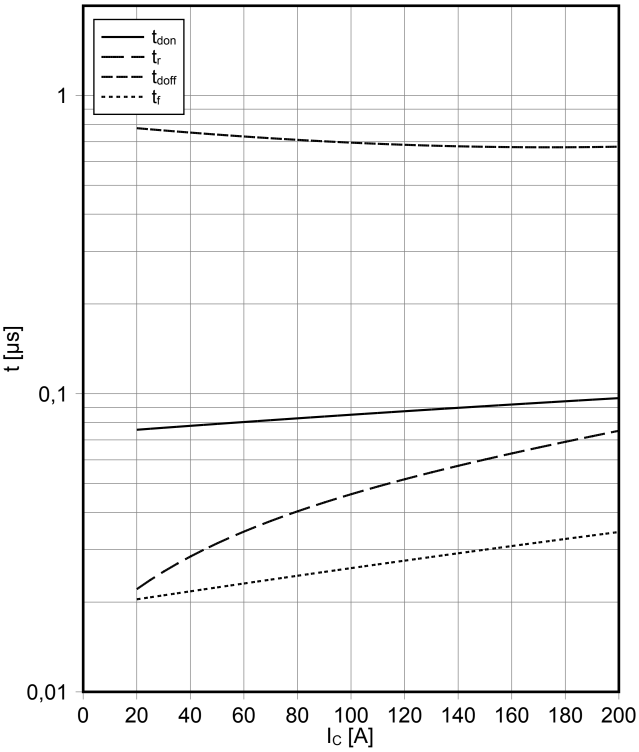
Schaltverluste IGBT, T2 / T3 (typisch)
switching losses IGBT, T2 / T3 (typical)
$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
$V_{GE} = \pm15$ V, $R_{Gon} = 20\ \Omega$, $R_{Goff} = 39\ \Omega$, $V_{CE} = 300$ V



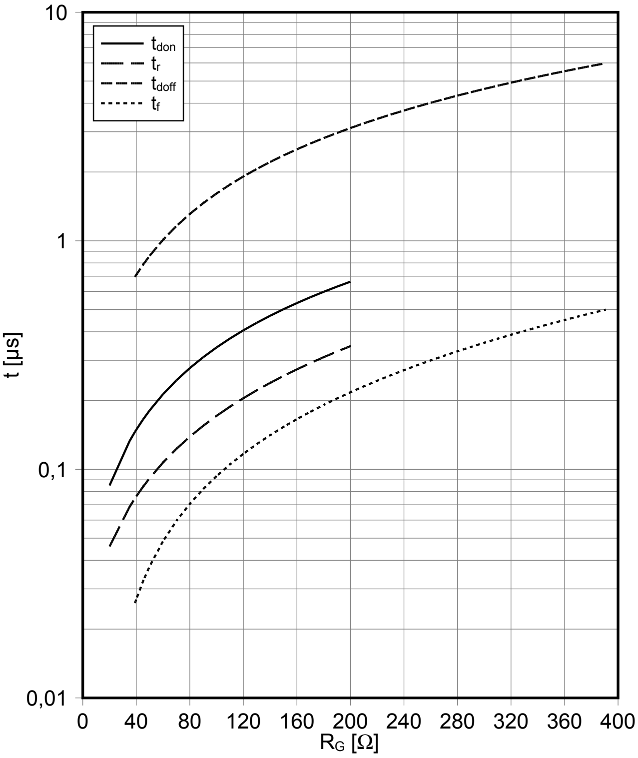
Schaltverluste IGBT, T2 / T3 (typisch)
switching losses IGBT, T2 / T3 (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
$V_{GE} = \pm15$ V, $I_C = 100$ A, $V_{CE} = 300$ V



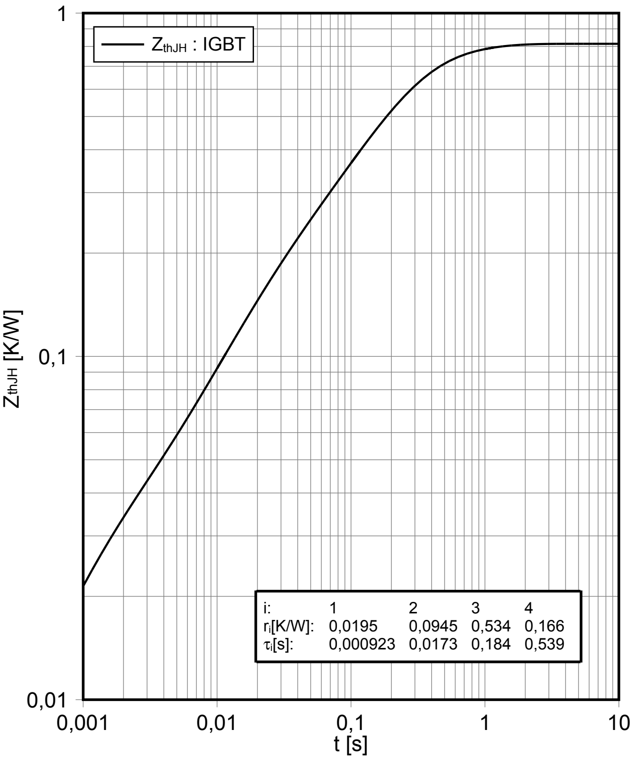
Schaltzeiten IGBT, T2 / T3 (typisch)
switching times IGBT, T2 / T3 (typical)
t_{don} = f (I_C), t_r = f (I_C), t_{doff} = f (I_C), t_f = f (I_C)
V_{GE} = ±15 V, R_{Gon} = 20 Ω, R_{Goff} = 39 Ω, V_{CE} = 300 V, Tvj = 150°C



Schaltzeiten IGBT, T2 / T3 (typisch)
switching times IGBT, T2 / T3 (typical)
t_{don} = f (R_G), t_r = f (R_G), t_{doff} = f (R_G), t_f = f (R_G)
V_{GE} = ±15 V, I_C = 100 A, V_{CE} = 300 V, Tvj = 150°C

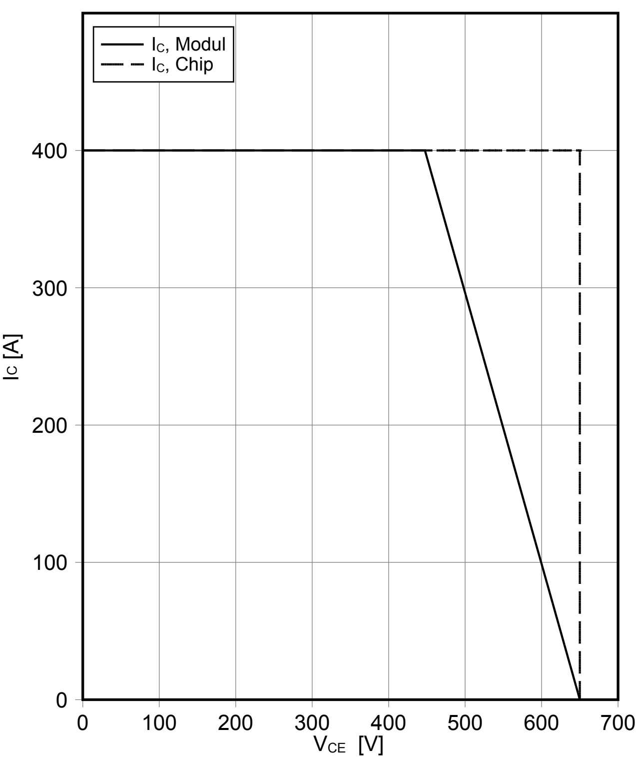


Transienter Wärmewiderstand IGBT, T2 / T3
transient thermal impedance IGBT, T2 / T3
Z_{thJH} = f (t)

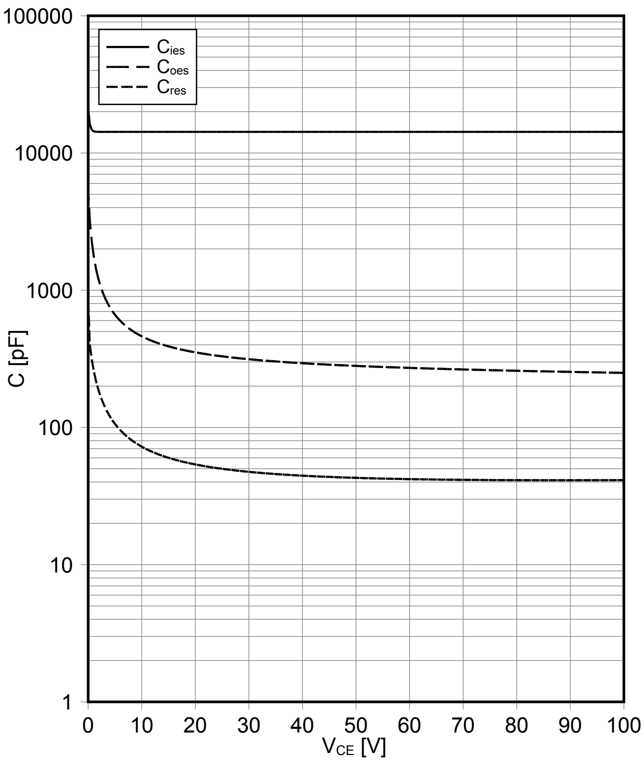


i:	1	2	3	4
r_i[K/W]:	0,0195	0,0945	0,534	0,166
τ_i[s]:	0,000923	0,0173	0,184	0,539

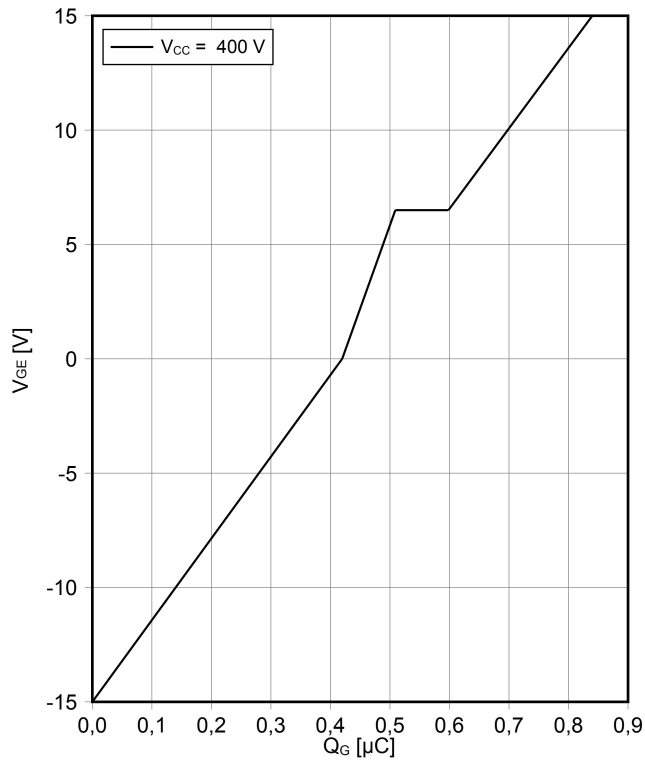
Sicherer Rückwärts-Arbeitsbereich IGBT, T2 / T3 (RBSOA)
reverse bias safe operating area IGBT, T2 / T3 (RBSOA)
I_C = f (V_{CE})
V_{GE} = ±15 V, R_{Goff} = 39 Ω, T_{vj} = 150°C



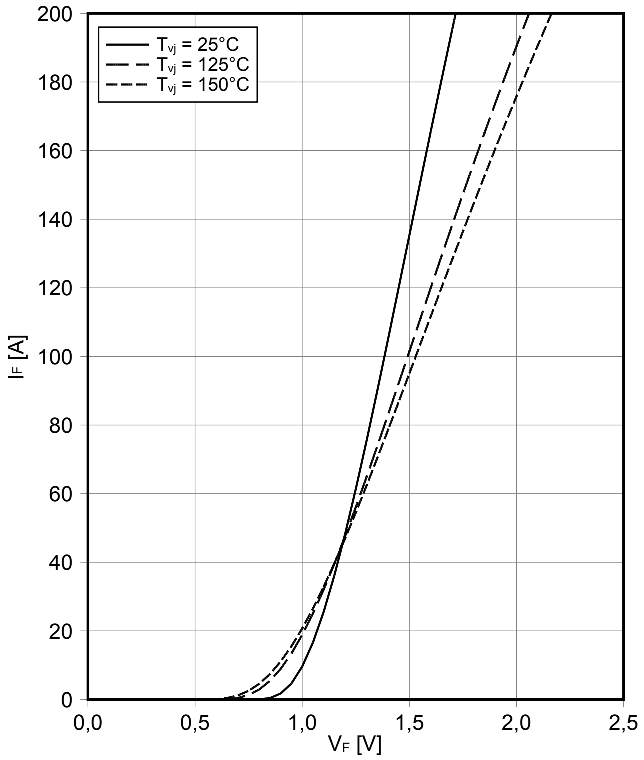
Kapazitäts Charakteristik IGBT, T2 / T3 (typisch)
capacity characteristic IGBT, T2 / T3 (typical)
C = f(V_{CE})
V_{GE} = 0 V, T_{vj} = 25°C, f = 100kHz



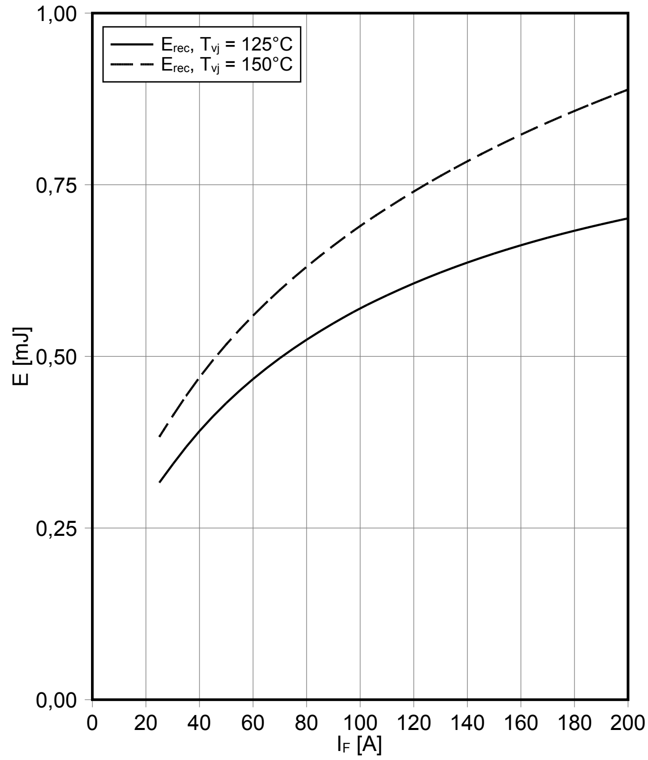
Gateladungs Charakteristik IGBT, T2 / T3 (typisch)
gate charge characteristic IGBT, T2 / T3 (typical)
V_{GE} = f(Q_G)
I_C = 200 A, T_{vj} = 25°C



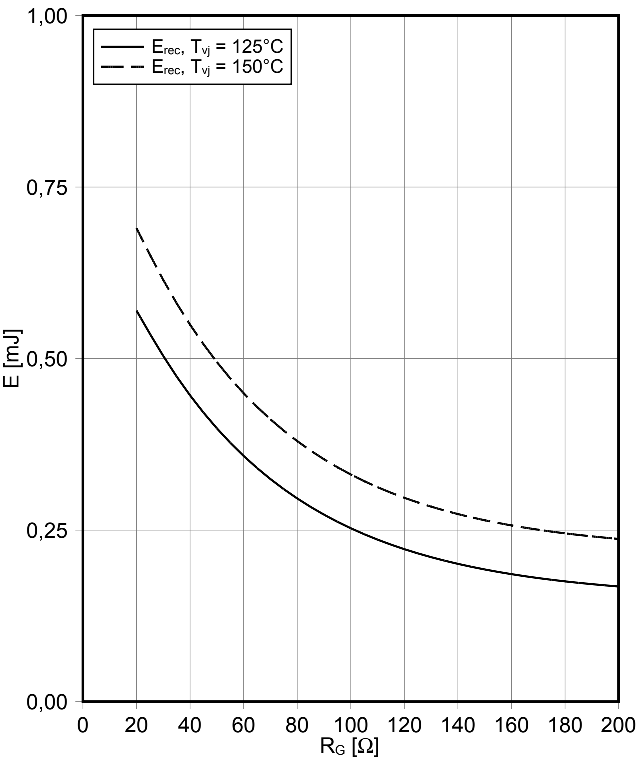
Durchlasskennlinie der Diode, D1 / D4 (typisch)
forward characteristic of Diode, D1 / D4 (typical)
I_F = f (V_F)



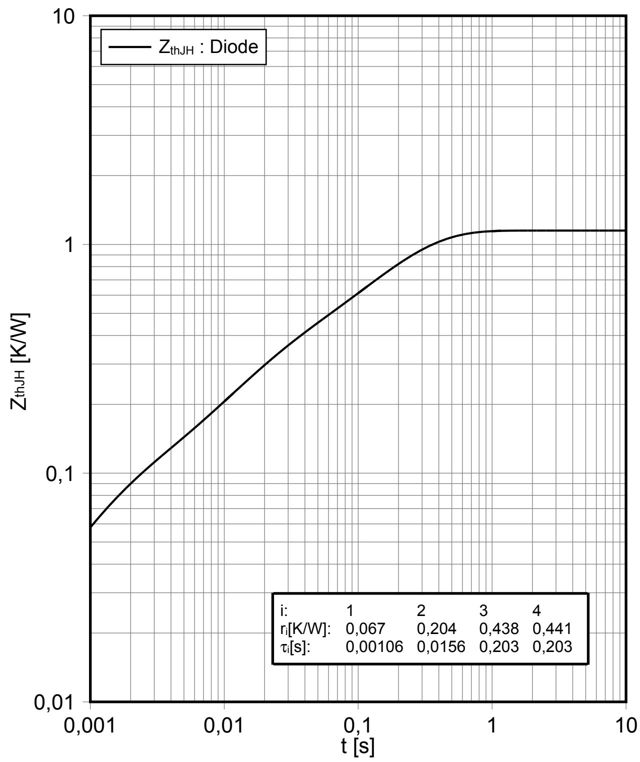
Schaltverluste Diode, D1 / D4 (typisch)
switching losses Diode, D1 / D4 (typical)
E_{rec} = f (I_F)
R_{Gon} = 20 Ω, V_{CE} = 300 V



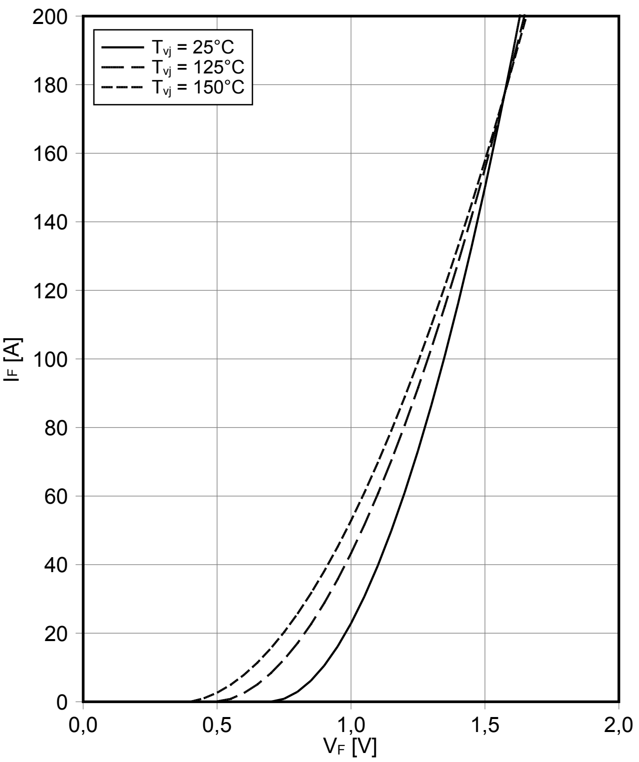
Schaltverluste Diode, D1 / D4 (typisch)
switching losses Diode, D1 / D4 (typical)
$E_{rec} = f(R_G)$
$I_F = 100$ A, $V_{CE} = 300$ V



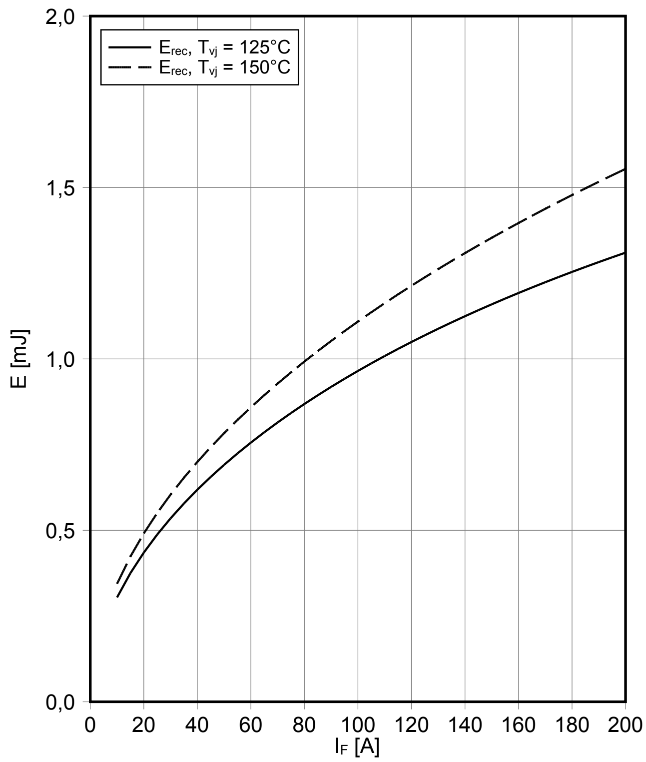
Transienter Wärmewiderstand Diode, D1 / D4
transient thermal impedance Diode, D1 / D4
$Z_{thJH} = f(t)$



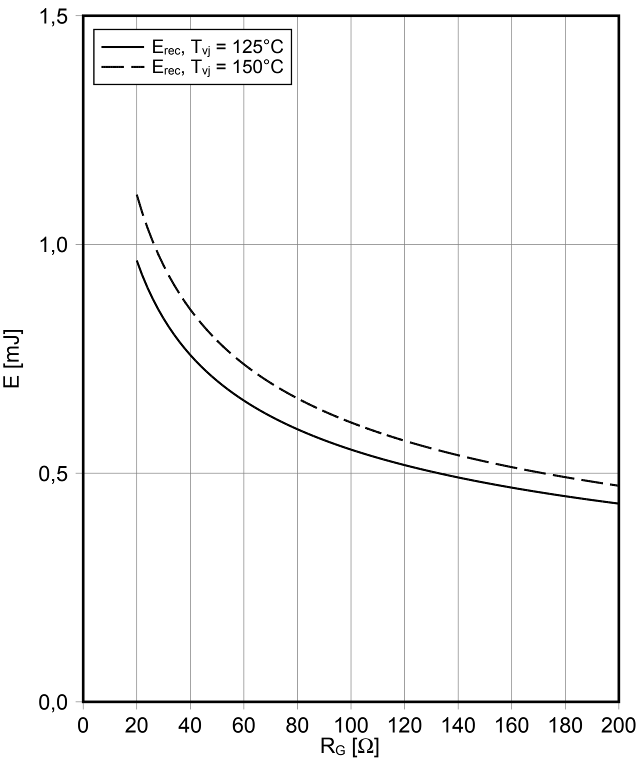
Durchlasskennlinie der Diode, D2 / D3 (typisch)
forward characteristic of Diode, D2 / D3 (typical)
$I_F = f(V_F)$



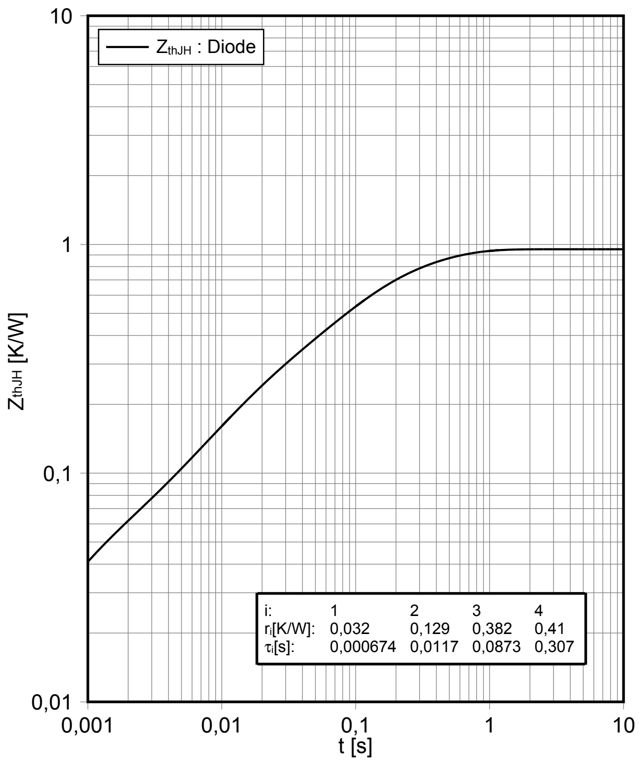
Schaltverluste Diode, D2 / D3 (typisch)
switching losses Diode, D2 / D3 (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 20\ \Omega$, $V_{CE} = 300$ V



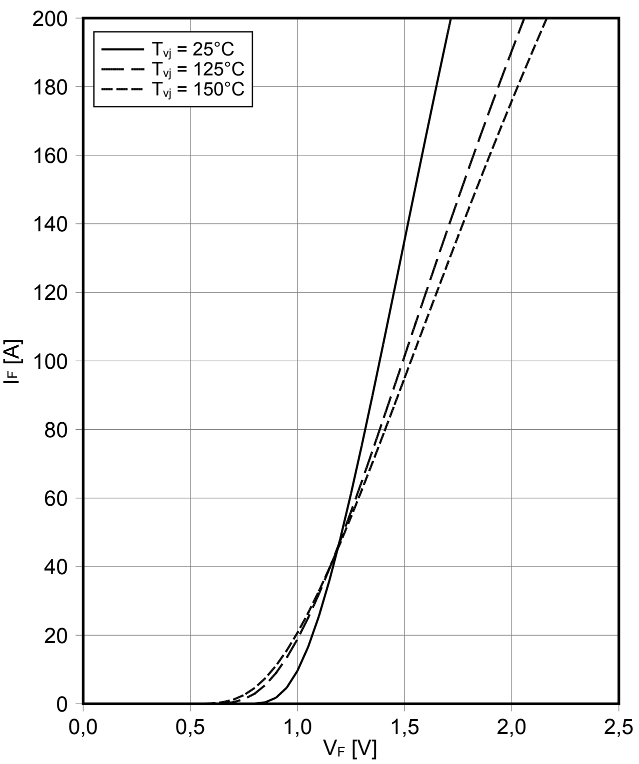
Schaltverluste Diode, D2 / D3 (typisch)
switching losses Diode, D2 / D3 (typical)
$E_{rec} = f(R_G)$
$I_F = 100$ A, $V_{CE} = 300$ V



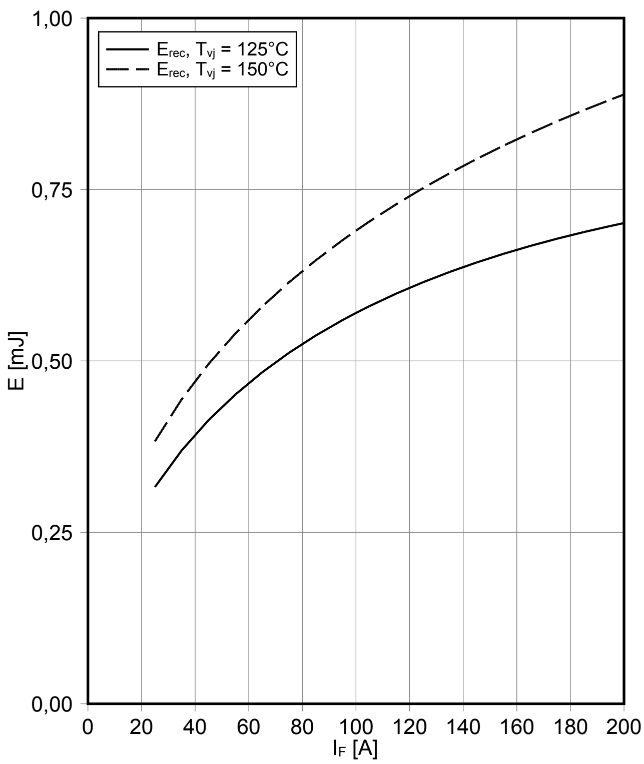
Transienter Wärmewiderstand Diode, D2 / D3
transient thermal impedance Diode, D2 / D3
$Z_{thJH} = f(t)$



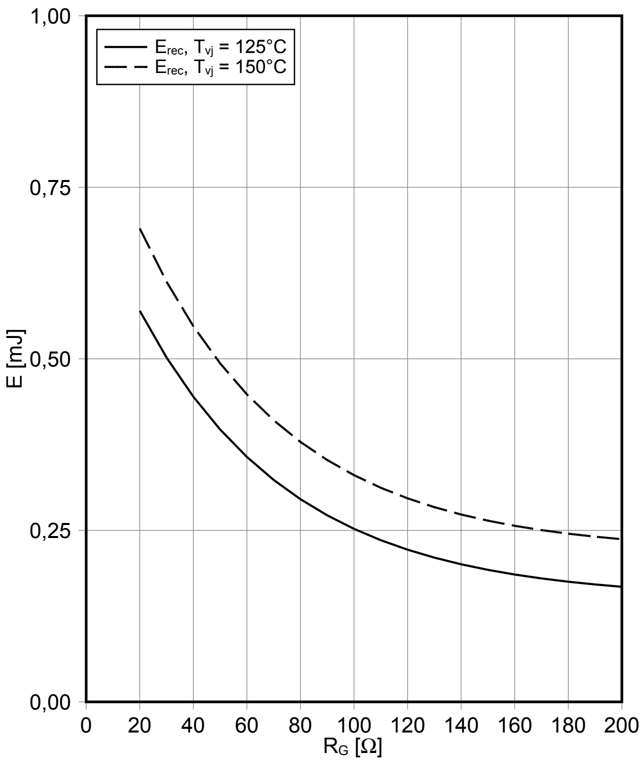
Durchlasskennlinie der Diode, D5-D6 (typisch)
forward characteristic of Diode, D5-D6 (typical)
$I_F = f(V_F)$



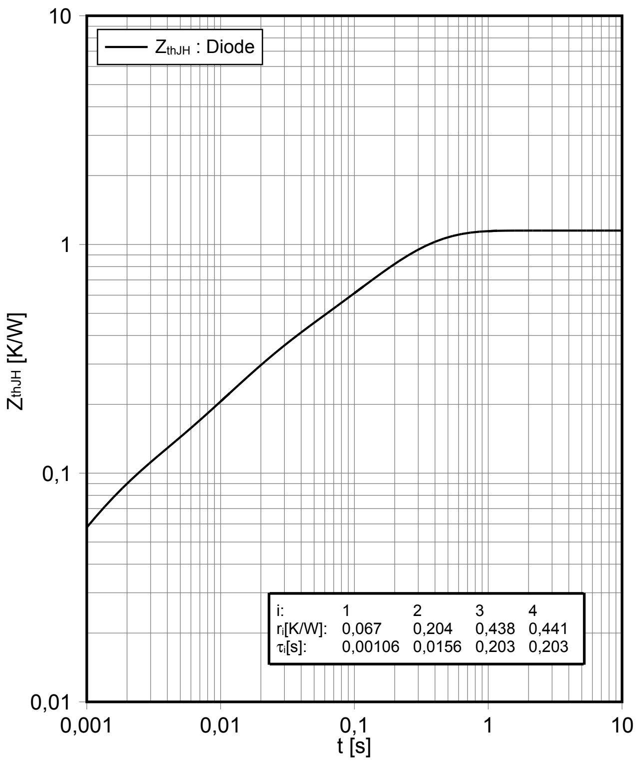
Schaltverluste Diode, D5-D6 (typisch)
switching losses Diode, D5-D6 (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 20$ Ω, $V_{CE} = 300$ V



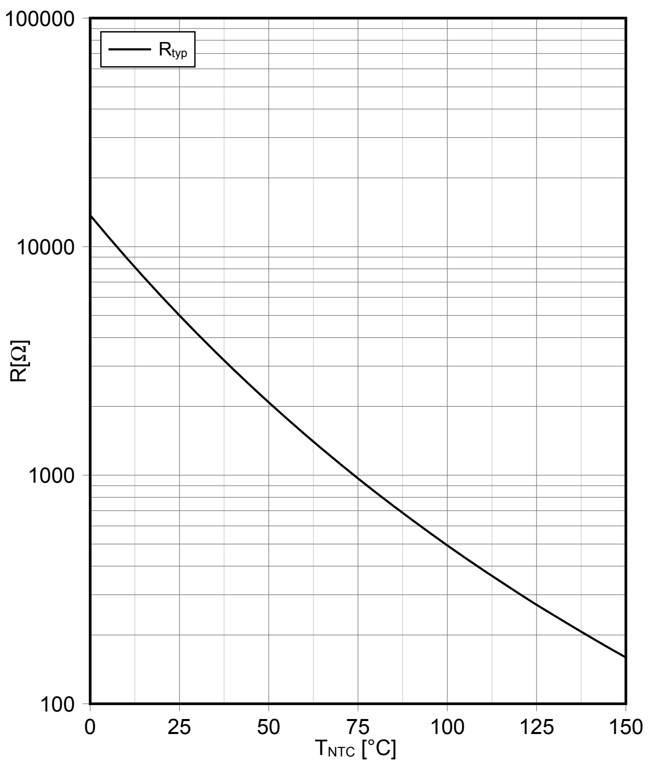
Schaltverluste Diode, D5-D6 (typisch)
switching losses Diode, D5-D6 (typical)
$E_{rec} = f\ (R_G)$
I_F = 100 A, V_{CE} = 300 V



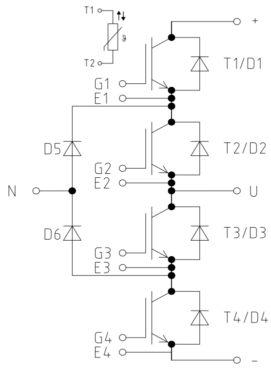
Transienter Wärmewiderstand Diode, D5-D6
transient thermal impedance Diode, D5-D6
$Z_{thJH} = f\ (t)$



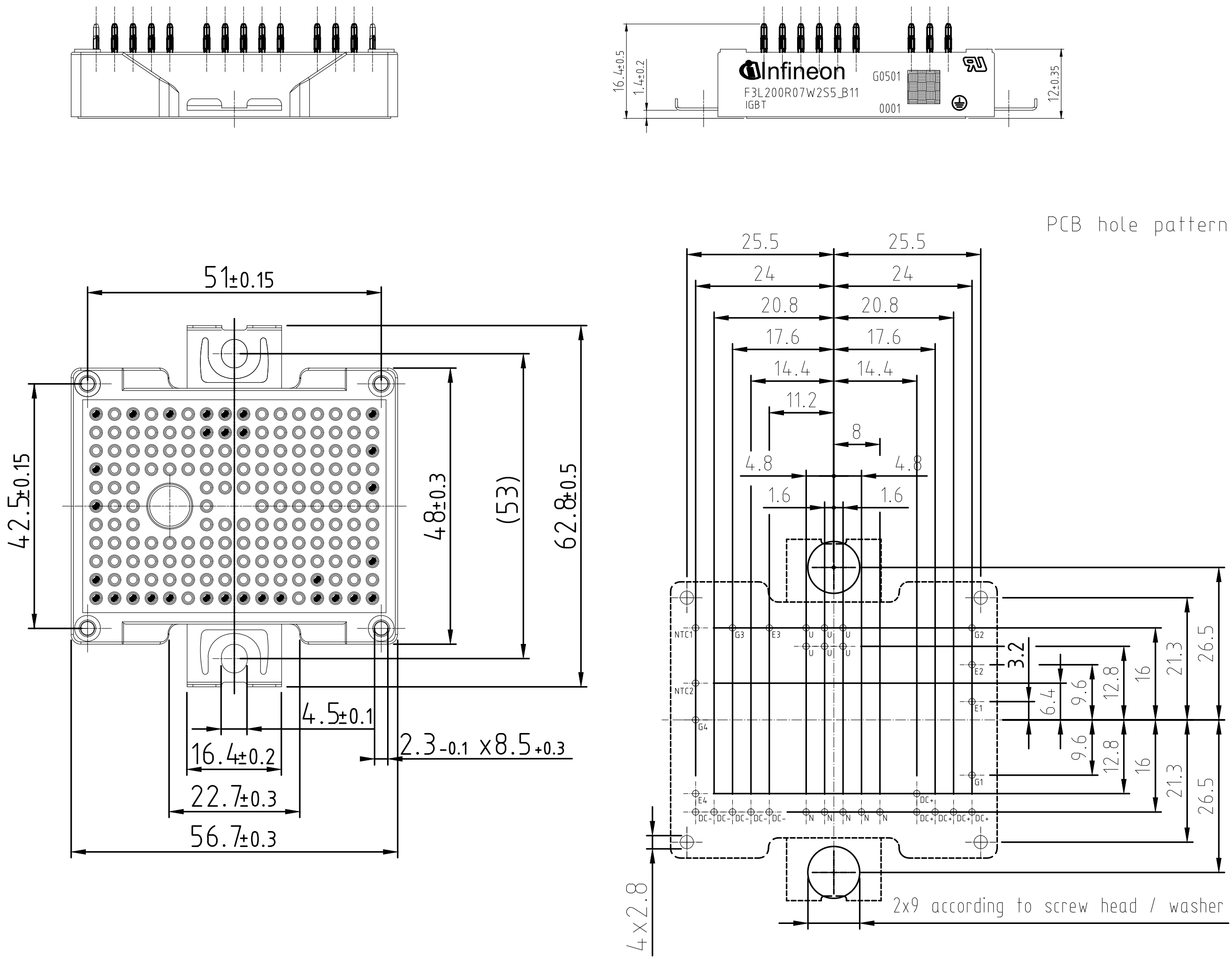
NTC-Widerstand-Temperaturkennlinie (typisch)
NTC-Thermistor-temperature characteristic (typical)
$R = f\ (T_{NTC})$



Schaltplan / Circuit diagram



Gehäuseabmessungen / Package outlines



- Pin-Grid 3.2mm
- Tolerance of PCB hole pattern ⌖ ⌀0.1
- Hole specification for contacts see AN 2009-01:

  Diameters of drill ⌀ 1.15mm

  and copper thickness in hole 25-50µm

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