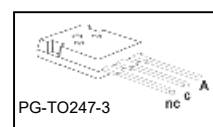
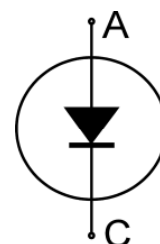


Fast Switching Emitter Controlled Diode



Features:

- 600V EmCon technology
- Fast recovery
- Soft switching
- Low reverse recovery charge
- Low forward voltage
- 175°C junction operating temperature
- Easy paralleling
- Pb-free lead plating; RoHS compliant
- Complete product spectrum and PSpice Models:
<http://www.infineon.com/emcon/>



Applications:

- Welding
- Motor drives

Datasheet IDW75E60

Type	V_{RRM}	I_F	$V_{F,TJ=25^\circ C}$	$T_{j,max}$	Marking	Package
IDW75E60	600V	75A	1.65V	175°C	D75E60	PG-TO247-3

Maximum Ratings

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	600	V
Continuous forward current	I_F	120	A
$T_C = 25^\circ C$		82	
$T_C = 90^\circ C$		75	
Surge non repetitive forward current	I_{FSM}	220	A
$T_C = 25^\circ C, t_p = 10 \text{ ms, sine halfwave}$			
Maximum repetitive forward current	I_{FRM}	225	A
$T_C = 25^\circ C, t_p \text{ limited by } t_{j,max}, D = 0.5$			
Power dissipation	P_{tot}	300	W
$T_C = 25^\circ C$		170	
$T_C = 90^\circ C$		150	
$T_C = 100^\circ C$			
Operating junction temperature	T_j	-40...+175	°C
Storage temperature	T_{stg}	-55...+150	
Soldering temperature	T_s	260	
1.6mm (0.063 in.) from case for 10 s			

Thermal Resistance

Parameter	Symbol	Conditions	Max. Value	Unit
Characteristic				
Thermal resistance, junction – case	R_{thJC}		0.5	K/W
Thermal resistance, junction – ambient	R_{thJA}		40	

Electrical Characteristic, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	

Static Characteristic

Collector-emitter breakdown voltage	V_{RRM}	$I_R = 0.25\text{mA}$	600	-	-	V
Diode forward voltage	V_F	$I_F = 75\text{A}$ $T_j = 25^\circ\text{C}$	-	1.65	2.0	
		$T_j = 175^\circ\text{C}$	-	1.65	-	
Reverse leakage current	I_R	$V_R = 600\text{V}$ $T_j = 25^\circ\text{C}$	-	-	40	μA
		$T_j = 175^\circ\text{C}$	-	-	2500	

Dynamic Electrical Characteristics

Diode reverse recovery time	t_{rr}	$T_j = 25^\circ\text{C}$ $V_R = 400\text{V}$, $I_F = 75\text{A}$, $dI_F/dt = 1460\text{A}/\mu\text{s}$	-	121	-	ns
Diode reverse recovery charge	Q_{rr}		-	2.4	-	μC
Diode peak reverse recovery current	I_{rr}		-	38.5	-	A
Diode peak rate of fall of reverse recovery current during t_b	dI_{rr}/dt		-	921	-	$\text{A}/\mu\text{s}$

Diode reverse recovery time	t_{rr}	$T_j = 125^\circ\text{C}$ $V_R = 400\text{V}$, $I_F = 75\text{A}$, $dI_F/dt = 1460\text{A}/\mu\text{s}$	-	155	-	ns
Diode reverse recovery charge	Q_{rrm}		-	4.4	-	μC
Diode peak reverse recovery current	I_{rr}		-	46.6	-	A
Diode peak rate of fall of reverse recovery current during t_b	dI_{rr}/dt		-	960	-	$\text{A}/\mu\text{s}$

Diode reverse recovery time	t_{rr}	$T_j = 175^\circ\text{C}$ $V_R = 400\text{V}$, $I_F = 75\text{A}$, $dI_F/dt = 1460\text{A}/\mu\text{s}$	-	182	-	ns
Diode reverse recovery charge	Q_{rrm}		-	5.8	-	μC
Diode peak reverse recovery current	I_{rr}		-	56.2	-	A
Diode peak rate of fall of reverse recovery current during t_b	dI_{rr}/dt		-	1013	-	$\text{A}/\mu\text{s}$

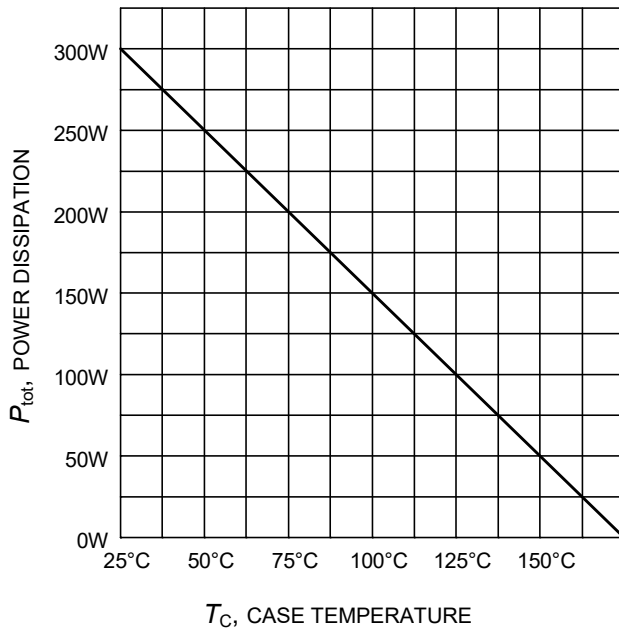


Figure 1. Power dissipation as a function of case temperature
($T_j \leq 175^\circ\text{C}$)

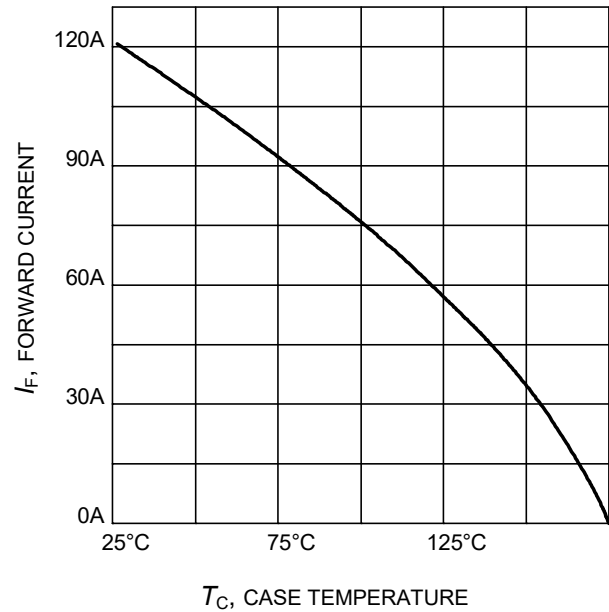


Figure 2. Diode forward current as a function of case temperature
($T_j \leq 175^\circ\text{C}$)

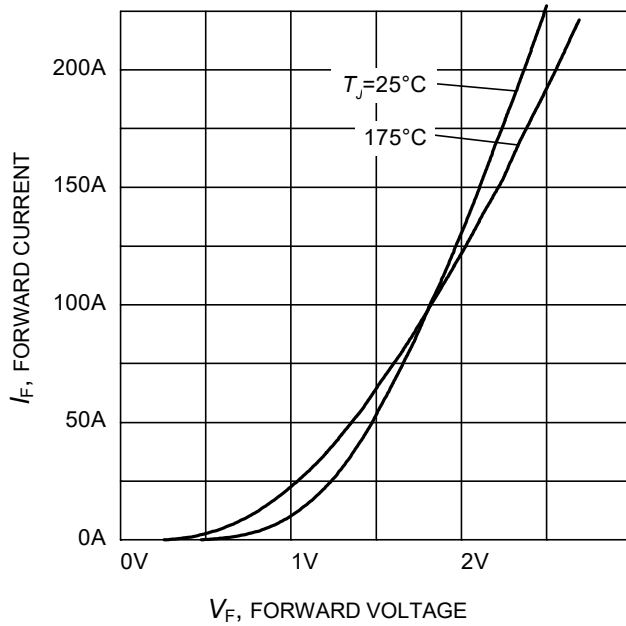


Figure 3. Typical diode forward current as a function of forward voltage

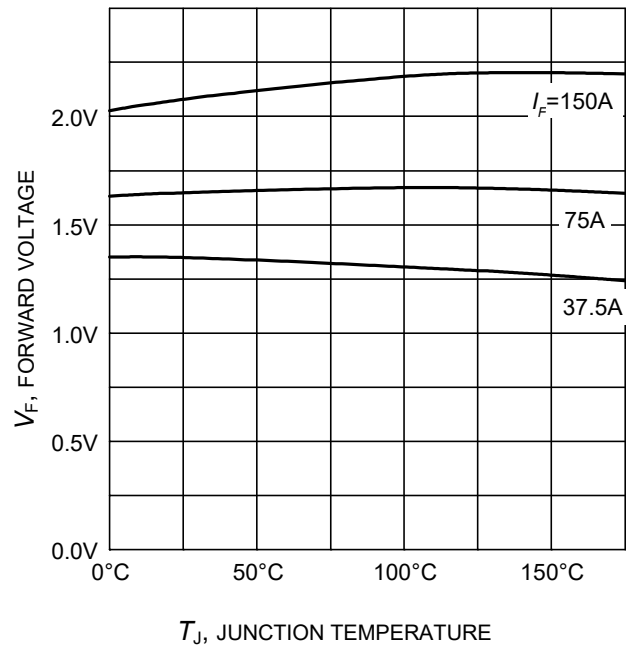


Figure 4. Typical diode forward voltage as a function of junction temperature

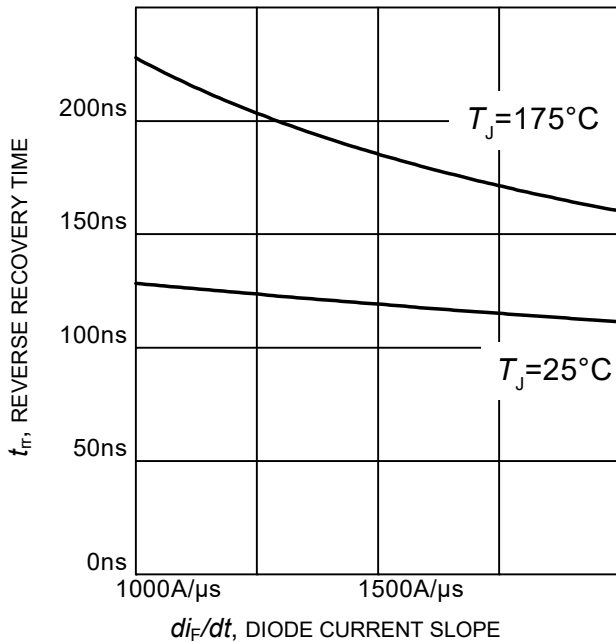


Figure 5. Typical reverse recovery time as a function of diode current slope
($V_R=400\text{V}$, $I_F=75\text{A}$,
Dynamic test circuit in Figure E)

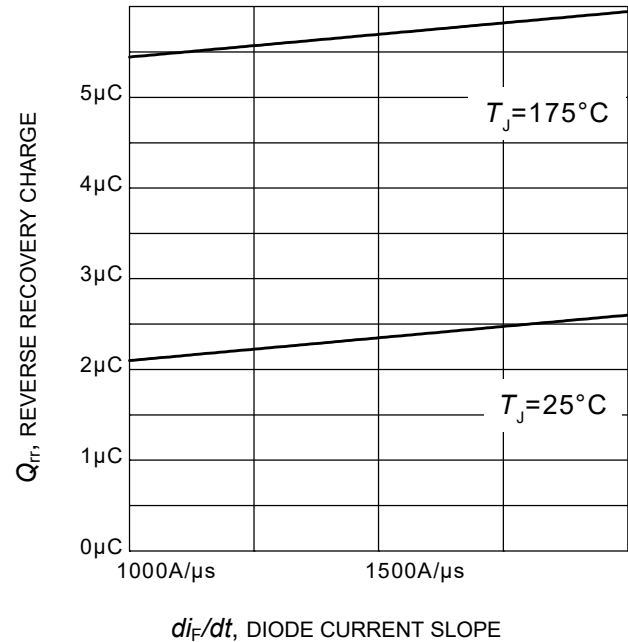


Figure 6. Typical reverse recovery charge as a function of diode current slope
($V_R = 400\text{V}$, $I_F = 75\text{A}$,
Dynamic test circuit in Figure E)

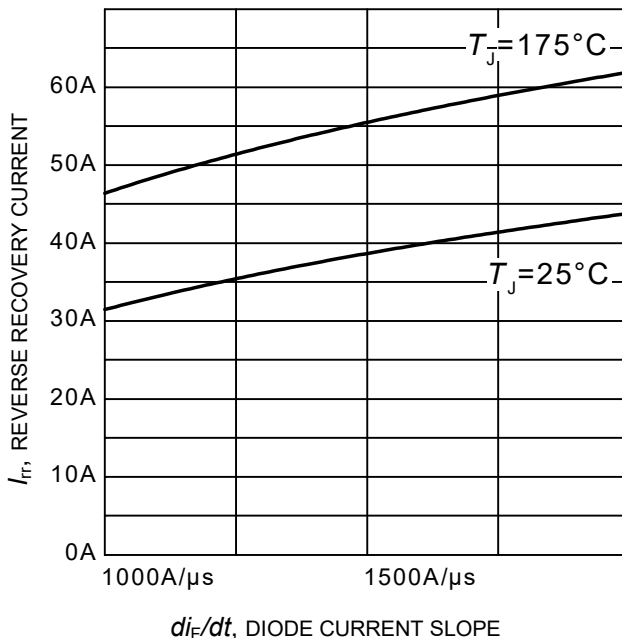


Figure 7. Typical reverse recovery current as a function of diode current slope
($V_R = 400\text{V}$, $I_F = 75\text{A}$,
Dynamic test circuit in Figure E)

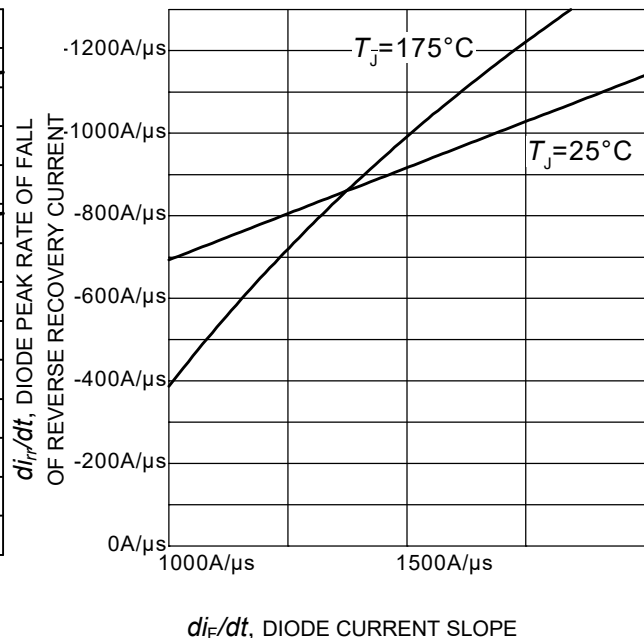


Figure 8. Typical diode peak rate of fall of reverse recovery current as a function of diode current slope
($V_R=400\text{V}$, $I_F=75\text{A}$,
Dynamic test circuit in Figure E)

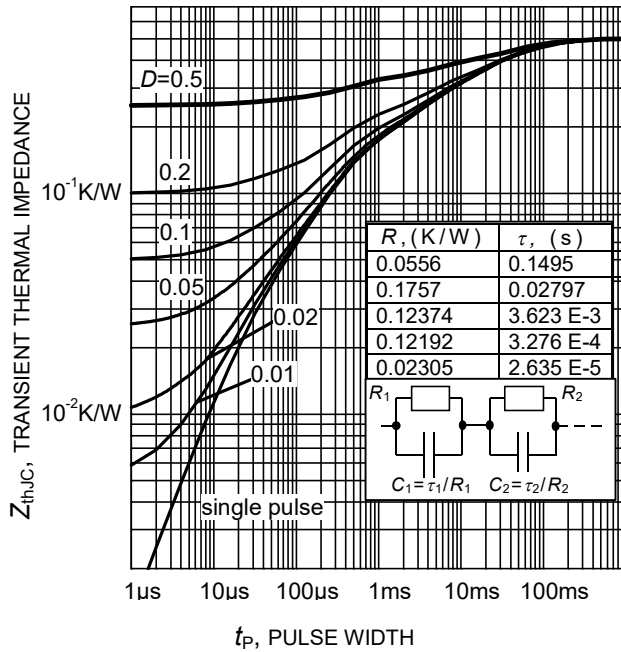
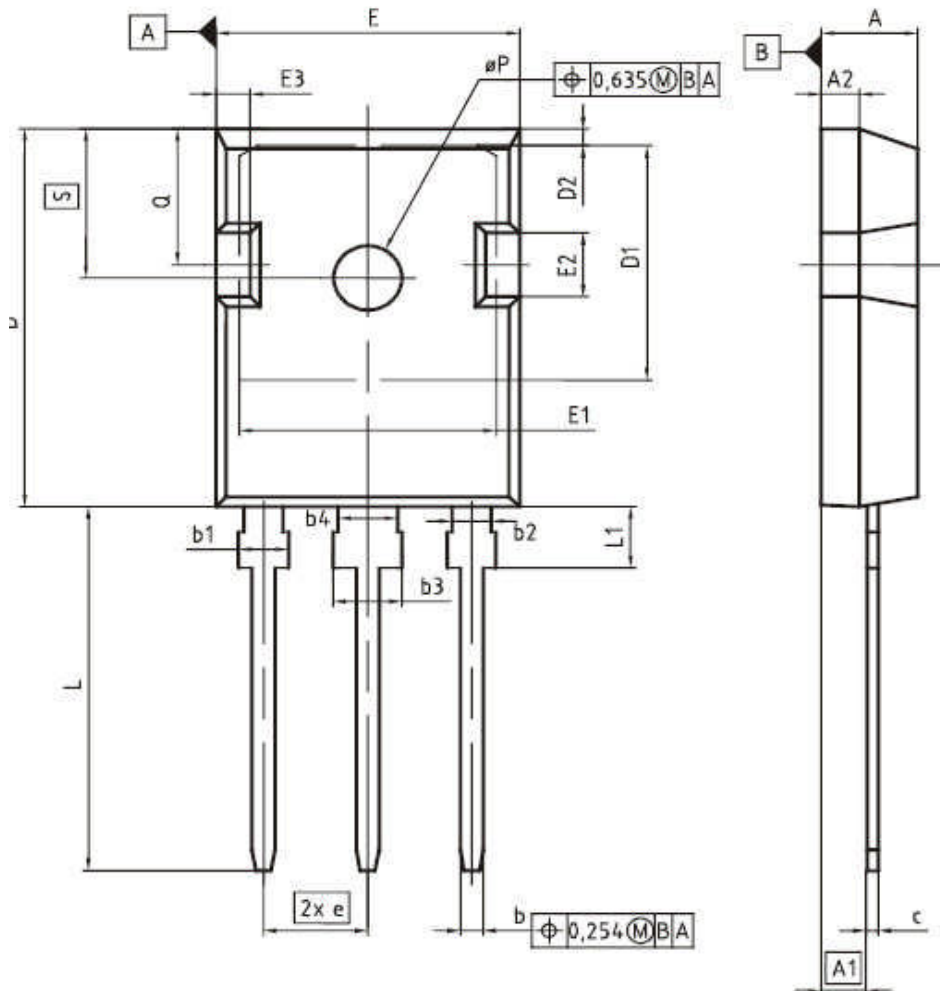
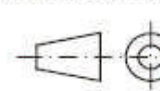


Figure 9. Diode transient thermal impedance as a function of pulse width
($D=t_p/T$)

PG-TO247-3



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4,83	5,21	0,190	0,205
A1	2,27	2,54	0,089	0,100
A2	1,85	2,16	0,073	0,085
b	1,07	1,33	0,042	0,052
b1	1,90	2,41	0,075	0,095
b2	1,90	2,16	0,075	0,085
b3	2,87	3,38	0,113	0,133
b4	2,87	3,13	0,113	0,123
c	0,55	0,68	0,022	0,027
D	20,80	21,10	0,819	0,831
D1	16,25	17,65	0,640	0,695
D2	0,95	1,35	0,037	0,053
E	15,70	16,13	0,618	0,635
E1	13,10	14,15	0,516	0,557
E2	3,68	5,10	0,145	0,201
E3	1,00	2,60	0,039	0,102
e	5,44 (BSC)		0,214 (BSC)	
N	3		3	
L	19,80	20,32	0,780	0,800
L1	4,10	4,47	0,161	0,176
øP	3,50	3,70	0,138	0,146
Q	5,49	6,00	0,216	0,236
S	6,04	6,30	0,238	0,248

DOCUMENT NO. Z8B00003327
SCALE 0 5 7,5mm
EUROPEAN PROJECTION 
ISSUE DATE 09-07-2010
REVISION 05

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Infineon Technologies AG
81726 Munich, Germany
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