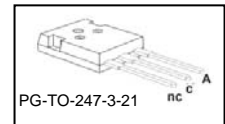


Features:

- 600 V 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

Type	V_{RRM}	I_F	$V_F, T_J=25^\circ\text{C}$	$T_{j,max}$	Marking	Package
IDW75E60	600V	75A	1.65V	175°C	D75E60	PG-TO-247-3-21

Maximum Ratings

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	600	V
Continuous forward current	I_F		A
$T_C = 25^\circ\text{C}$		120	
$T_C = 90^\circ\text{C}$		82	
$T_C = 100^\circ\text{C}$		75	
Surge non repetitive forward current	I_{FSM}	220	A
$T_C = 25^\circ\text{C}$, $t_p = 10$ ms, sine halfwave			
Maximum repetitive forward current	I_{FRM}	225	A
$T_C = 25^\circ\text{C}$, t_p limited by $t_{j,max}$, $D = 0.5$			
Power dissipation	P_{tot}		W
$T_C = 25^\circ\text{C}$		300	
$T_C = 90^\circ\text{C}$		170	
$T_C = 100^\circ\text{C}$		150	
Operating junction and storage temperature	T_j, T_{stg}	-55...+175	°C
Soldering temperature	T_S	260	°C
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 $T_j = 25\text{ }^\circ\text{C}$, 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	$I_F=75\text{A}$	-	1.65	2.0	
		$T_j=25\text{ }^\circ\text{C}$	-	1.65	-	
Reverse leakage current	I_R	$V_R=600\text{V}$	-	-	40	μA
		$T_j=25\text{ }^\circ\text{C}$	-	-	1000	
		$T_j=175\text{ }^\circ\text{C}$	-	-		

Dynamic Electrical Characteristics

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

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

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

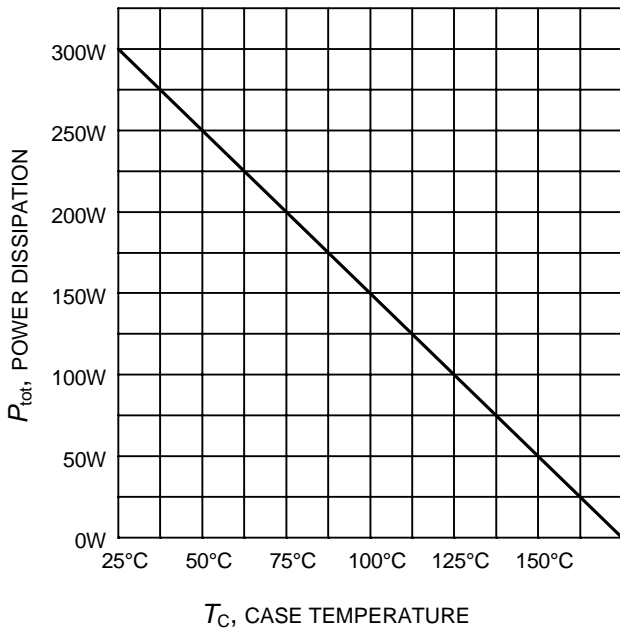


Figure 1. Power dissipation as a function of case temperature
($T_j \leq 175^\circ\text{C}$)

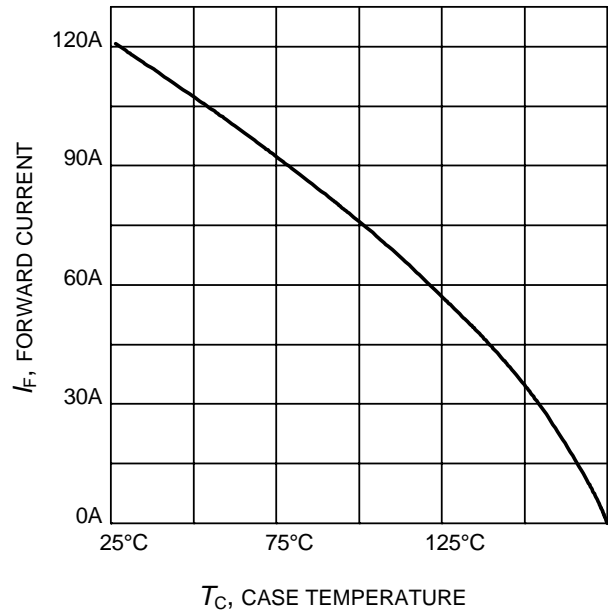


Figure 2. Diode forward current as a function of case temperature
($T_j \leq 175^\circ\text{C}$)

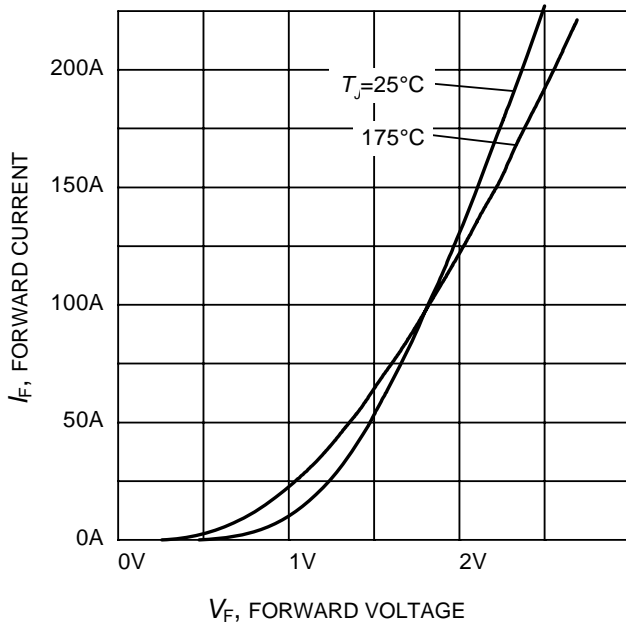


Figure 3. Typical diode forward current as a function of forward voltage

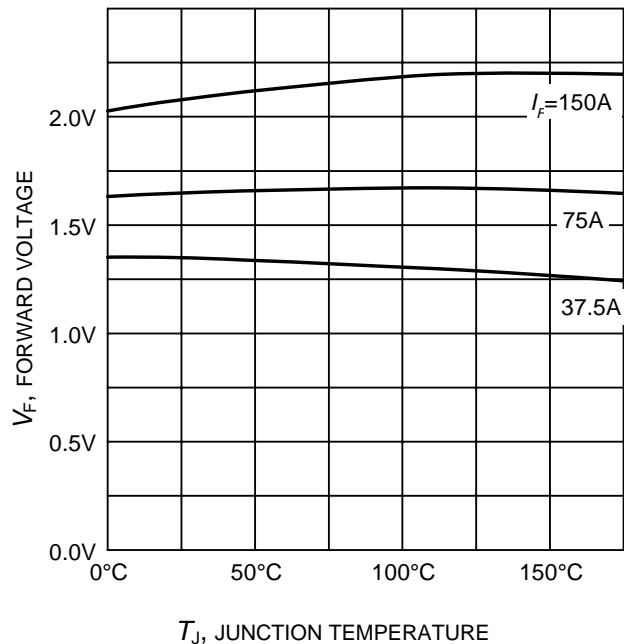


Figure 4. Typical diode forward voltage as a function of junction temperature

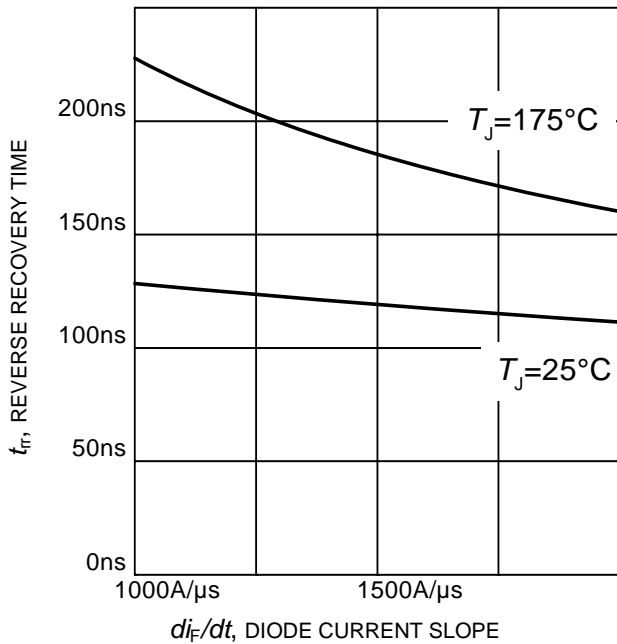


Figure 5. Typical reverse recovery time as a function of diode current slope
 ($V_R=400V$, $I_F=75A$,
 Dynamic test circuit in Figure E)

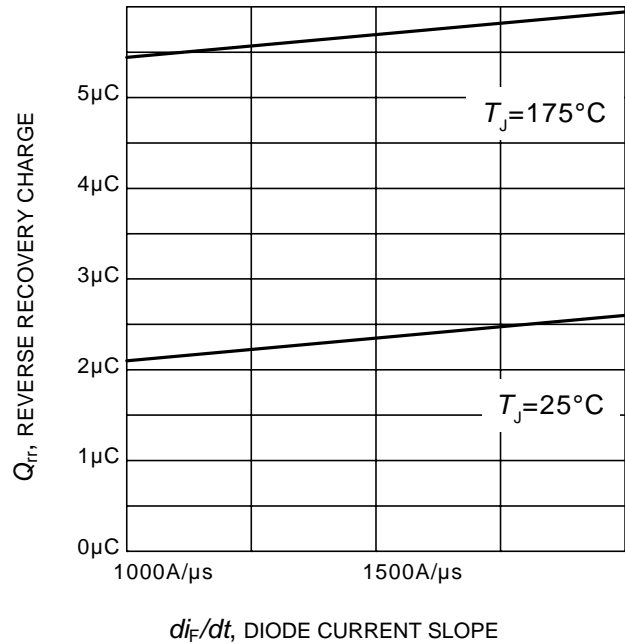


Figure 6. Typical reverse recovery charge as a function of diode current slope
 ($V_R = 400V$, $I_F = 75A$,
 Dynamic test circuit in Figure E)

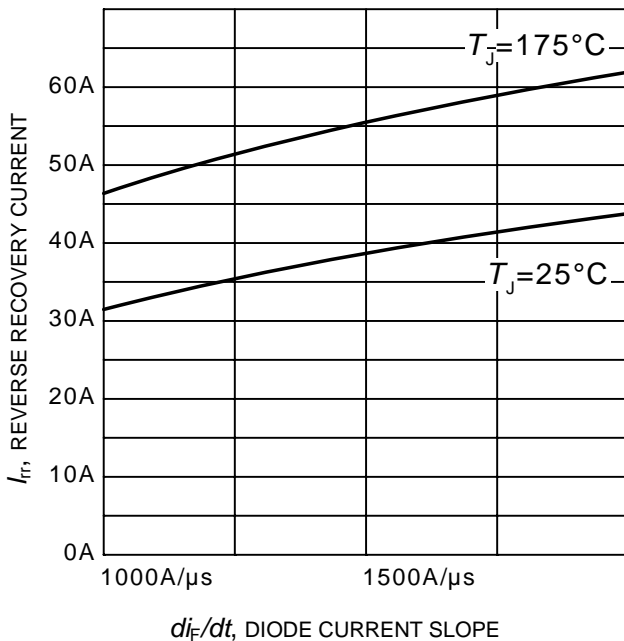


Figure 7. Typical reverse recovery current as a function of diode current slope
 ($V_R = 400V$, $I_F = 75A$,
 Dynamic test circuit in Figure E)

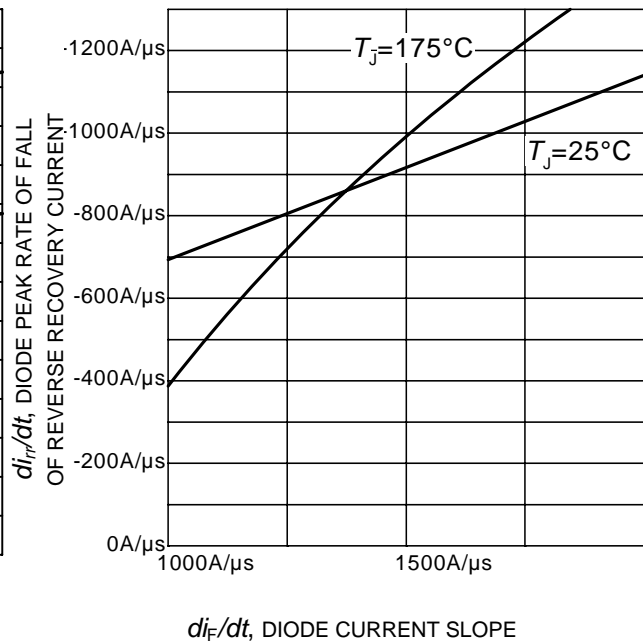


Figure 8. Typical diode peak rate of fall of reverse recovery current as a function of diode current slope
 ($V_R=400V$, $I_F=75A$,
 Dynamic test circuit in Figure E)

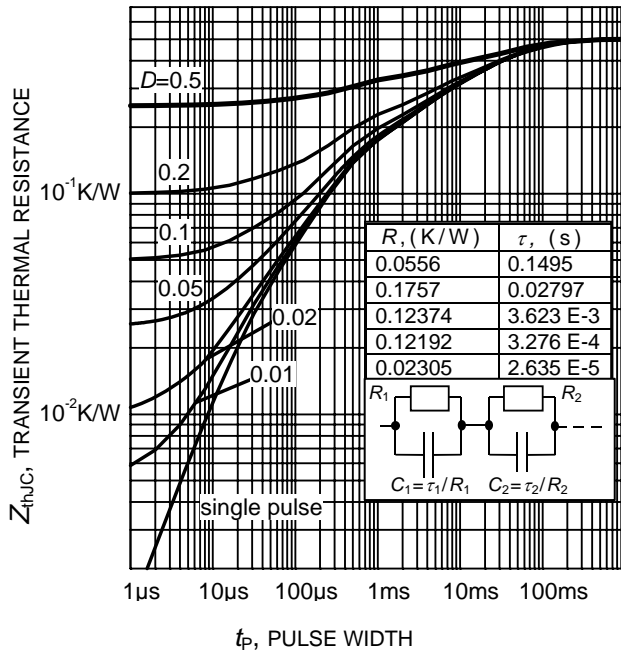
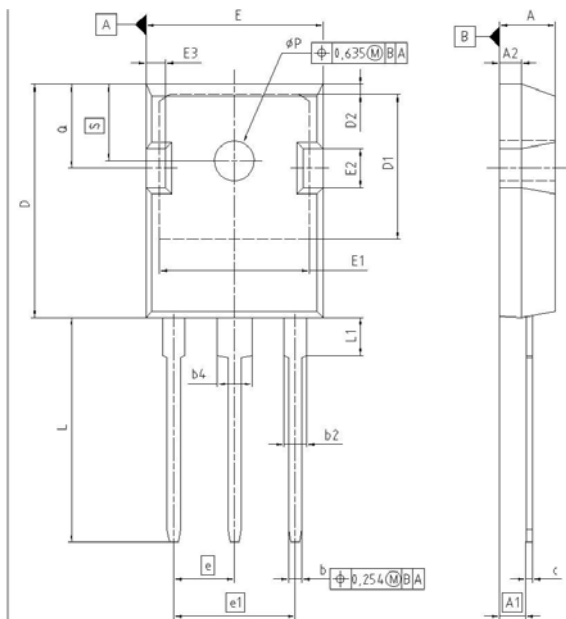


Figure 9. Diode transient thermal impedance as a function of pulse width
 ($D = t_p / T$)

PG-T0247-3-1



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.903	5.157	0.193	0.203
A1	2.273	2.527	0.092	0.096
A2	1.853	2.107	0.075	0.081
b	1.073	1.327	0.047	0.052
b2	1.903	2.386	0.075	0.094
b4	2.870	3.454	0.113	0.136
c	0.549	0.752	0.024	0.030
D	20.823	21.077	0.820	0.830
D1	17.323	17.831	0.682	0.702
D2	1.063	1.317	0.042	0.052
E	15.773	16.027	0.621	0.631
E1	13.893	14.147	0.547	0.557
E2	3.683	3.937	0.145	0.155
E3	1.683	1.937	0.066	0.076
e	5.450		0.215	
e1	10.900		0.430	
N	3		3	
L	20.053	20.307	0.789	0.799
L1	4.168	4.472	0.164	0.176
phi P	3.559	3.661	0.140	0.144
Q	5.493	5.747	0.216	0.226
S	6.043	6.297	0.238	0.248

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