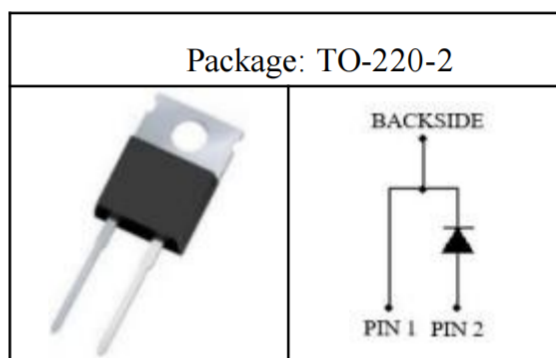


Features

- ★ Zero forward recovery voltage
- ★ Zero reverse recovery current
- ★ Excellent surge current capability
- ★ Temperature independent switching
- ★ Positive temperature coefficient on VF
- ★ High frequency operation

Product Summary

V_{RRM}	Q_C	$I_F(T_C=155^\circ\text{C})$
650V	56nC	16A



Applications

- ★ Motor drives
- ★ Uninterruptible power supplies
- ★ Photovoltaic inverter
- ★ Switch mode power supplies (SMPS)



Maximum Ratings

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		650	V
I_F	Continuous forward current	$T_C=25^\circ\text{C}$ $T_C=155^\circ\text{C}$	60 16	A
I_{FSM}	Non-Repetitive forward surge current	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	120	A
$\int i^2 dt$	$i^2 t$ value	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$	72	A ² S
P_{tot}	Power dissipation	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$	217 94	W
T_j	Operating junction temperature		-55~175	$^\circ\text{C}$
T_{stg}	Storage temperature		-55~175	$^\circ\text{C}$

Electrical Characteristics

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{DC}	DC blocking voltage	$T_j=25^{\circ}C$	650			V
V_F	Diode forward voltage	$I_F=16A, T_j=25^{\circ}C$ $I_F=16A, T_j=135^{\circ}C$ $I_F=16A, T_j=175^{\circ}C$		1.28 1.31 1.39	1.55 1.69 1.89	V
I_R	Reverse current	$V_R=650V, T_j=25^{\circ}C$ $V_R=650V, T_j=175^{\circ}C$		1 18	50 200	μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capacitive charge	$V_R=400V, T_j=25^{\circ}C$ $Q_C = \int_0^V R C(V) dV$		56		nC
C	Total capacitance	$V_R=1V, f=1MHz$ $V_R=300V, f=1MHz$ $V_R=600V, f=1MHz$		826 91 79		pF
E_C	Capacitance stored energy	$V_R=400V$		8.5		μJ

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal Resistance from Junction to Case		0.69		$^{\circ} C/W$

Typical Performance

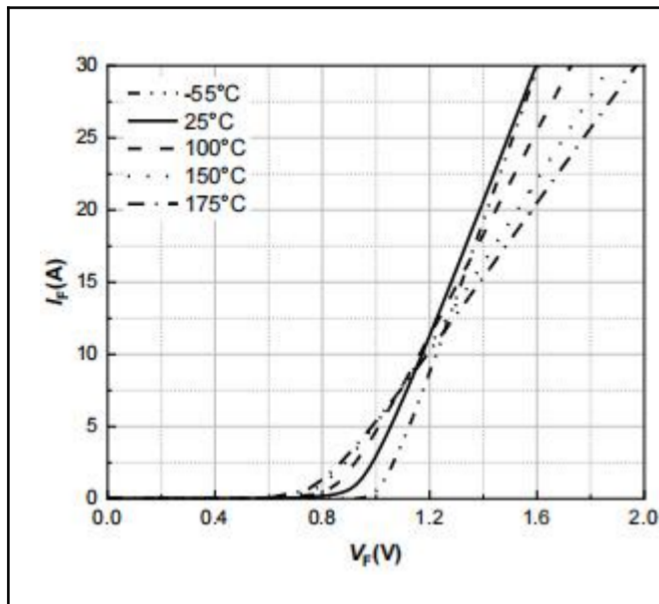


Figure 1. Typical forward characteristics

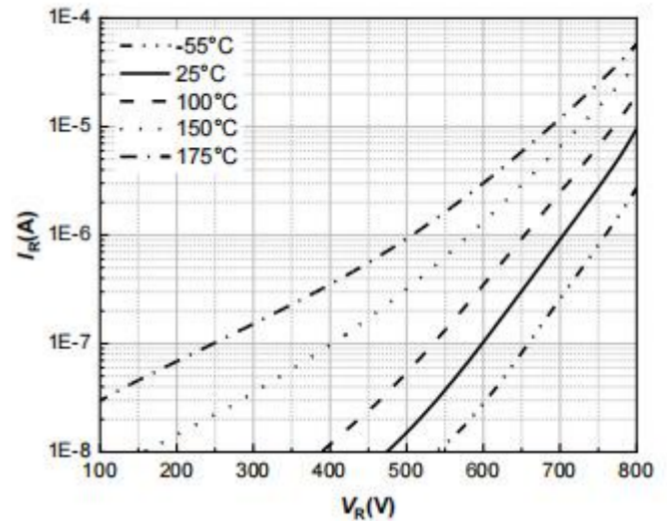


Figure 2. Typical reverse current as function of reverse voltage

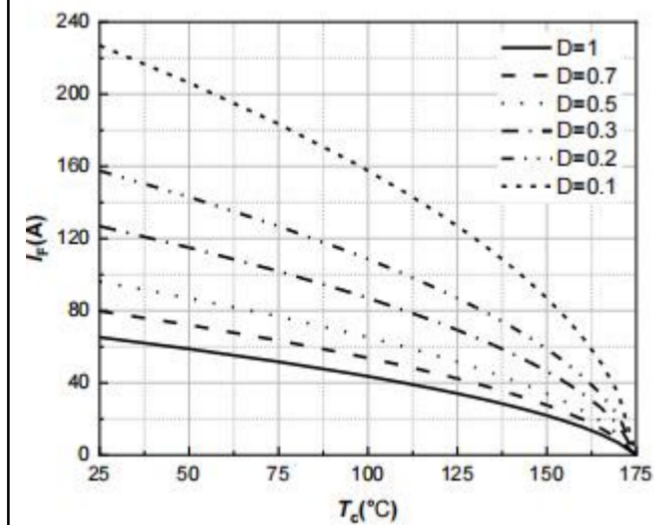


Figure 3. Diode forward current as function of temperature, D=duty cycle

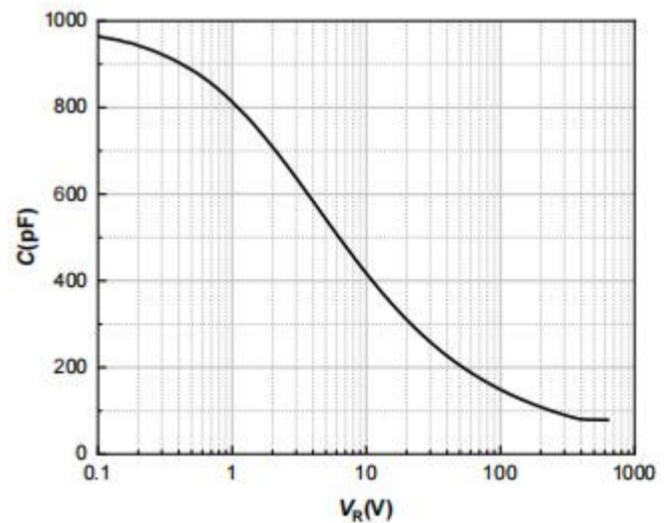


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_J=25^\circ\text{C}$; $f=1\text{ MHz}$

Typical Performance

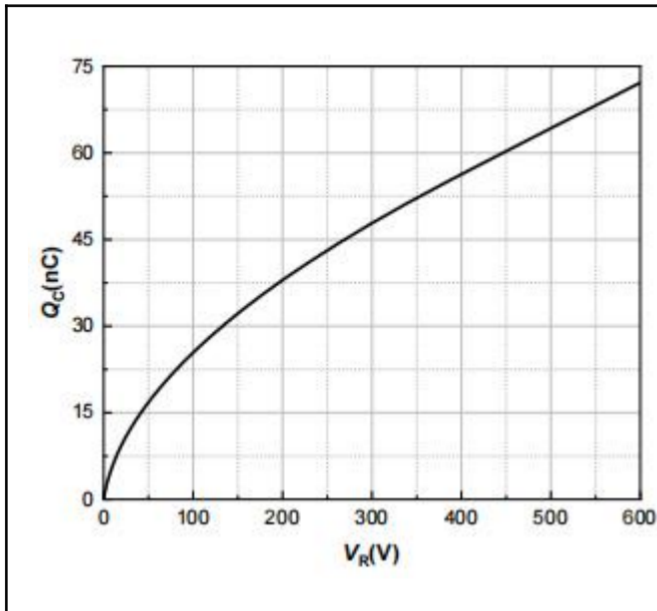


Figure 5. Typical reverse charge as function of reverse voltage

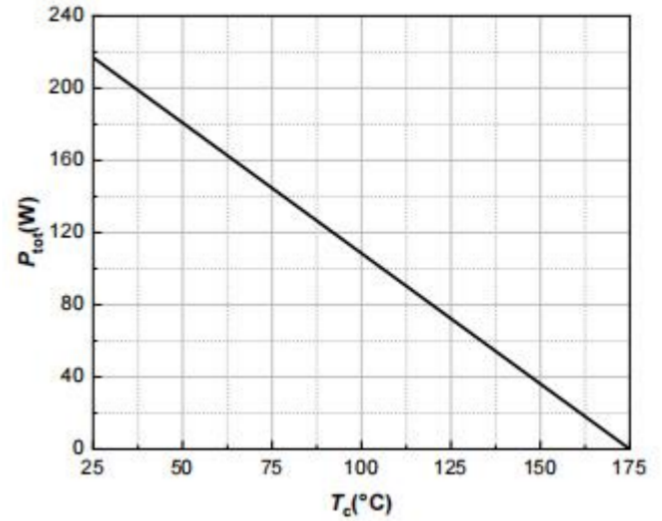


Figure 6. Power dissipation as function of case temperature

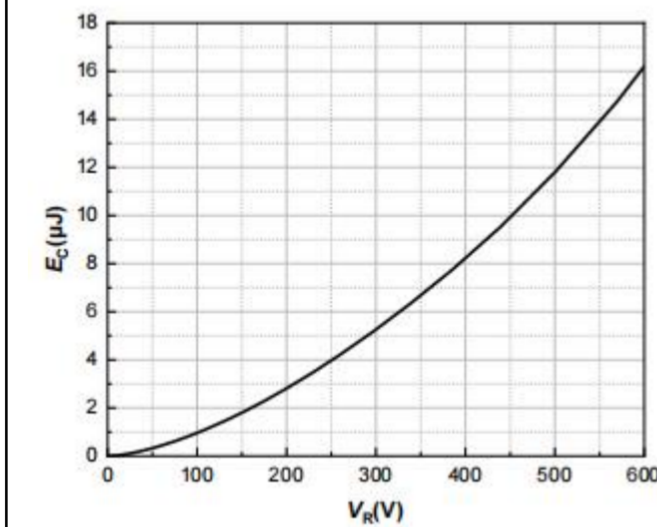


Figure 7. Capacitance stored energy

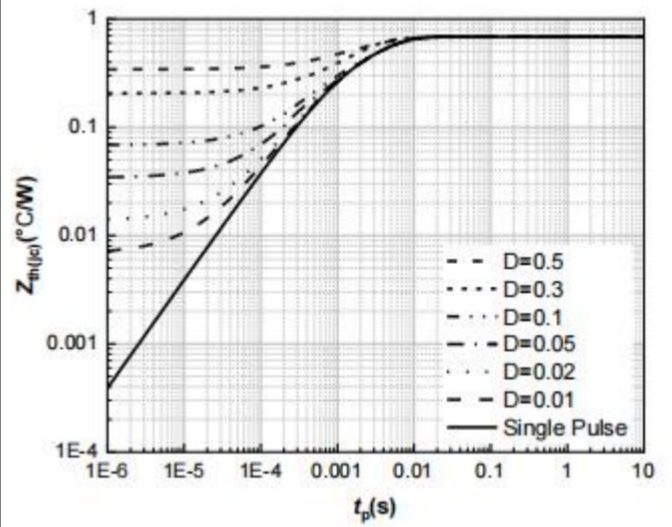
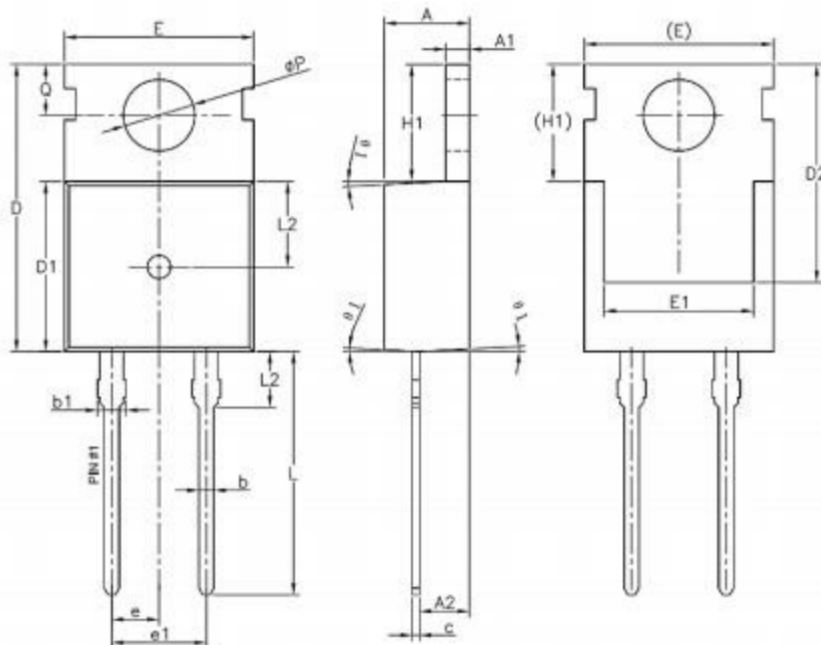


Figure 8. Max. transient thermal impedance, $Z_{th(jc)} = f(t_p)$, parameter: $D = t_p/T$

Package Outlines



SYMBOL	Unit: mm		
	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	1.27	1.30	1.33
A2	2.30	2.40	2.50
b	0.70	-	0.90
b1	1.42	-	1.57
c	0.45	0.50	0.60
D	15.30	15.70	16.10
D1	9.10	9.20	9.30
D2	13.10	-	13.70
E	9.70	9.90	10.20
E1	7.80	8.00	8.20
e	2.54 BSC		
e1	5.08 BSC		
H1	6.30	6.50	6.70
L	12.78	13.08	13.38
L1	-	-	3.50
L2	4.60 REF		
ΦP	3.55	3.60	3.65
Q	2.73	-	2.87
θ1	1°	3°	5°