

Features

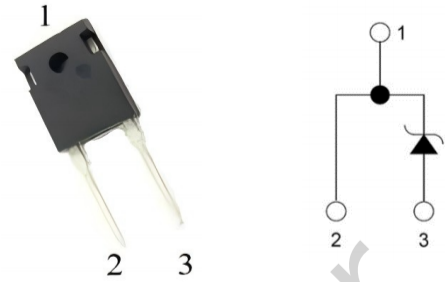
- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on V_F
- Temperature Independent Switching Behavior
- High surge current capability

Applications

- Motor Drives
- Solar / Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies

Product Summary

$V_R = 1200\text{ V}$
 $I_F = 20\text{ A}$ ($T_C=150^\circ\text{C}$)
 $Q_C = 93\text{ nC}$ ($V_R=800\text{ V}$)



TO-247-2

Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- Higher Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Continuous Forward Current	I_F	$T_C=25^\circ\text{C}$	58	A
		$T_C=135^\circ\text{C}$	26	
		$T_C=150^\circ\text{C}$	20	
Non repetitive Forward Surge Current	I_{FSM}	$T_C = 25^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	140	A
		$T_C = 110^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	130	
Repetitive peak Forward Surge Current	I_{FRM}	$T_C = 25^\circ\text{C}$, $t_p=10\text{ ms}$, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	110	A
		$T_C = 110^\circ\text{C}$, $t_p=10\text{ ms}$, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	100	
Total power dissipation	P_D	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$	250 108	W
Single Pulse Avalanche Energy	E_{AS}	$L=2\text{ mH}$, $I_{AS}=10\text{ A}$	100	mJ
Diode dv/dt ruggedness	dv/dt	$V_R = 0\text{--}1200\text{ V}$	80	V/ns
Operating Junction Temperature	T_J		-55 to 175	$^\circ\text{C}$
Storage Temperature	T_{STG}		-55 to 175	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage	V_{DC}	$T_J = 25^{\circ}C$	1200			V
Forward Voltage	V_F	$I_F = 20A, T_J = 25^{\circ}C$		1.45	1.8	V
		$I_F = 20A, T_J = 125^{\circ}C$		1.8		V
		$I_F = 20A, T_J = 175^{\circ}C$		2.0		V
Reverse Current	I_R	$V_R = 1200V, T_J = 25^{\circ}C$		10	200	μA
		$V_R = 1200V, T_J = 125^{\circ}C$		20	250	μA
		$V_R = 1200V, T_J = 175^{\circ}C$		50	300	μA
Total Capacitive Charge	Q_C	$V_R = 800V, T_J = 25^{\circ}C$		93		nC
Total Capacitance	C	$V_R = 1V, T_J = 25^{\circ}C,$ Freq = 1MHz		1120		pF
		$V_R = 400V, T_J = 25^{\circ}C,$ Freq = 1MHz		92		
		$V_R = 800V, T_J = 25^{\circ}C,$ Freq = 1MHz		62		

Note: This is a majority carrier diode, so there is no reverse recovery charge

Thermal Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Thermal Resistance	$R_{th(j-c)}$	junction-case		0.6	0.75	$^{\circ}C/W$

Typical Electrical Curves

Figure 1. Forward Characteristics

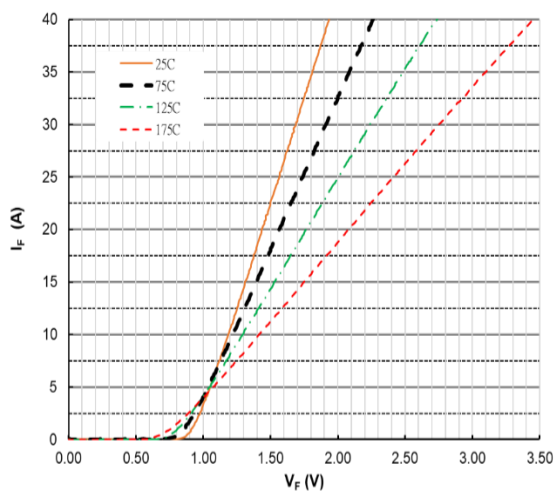


Figure 2. Forward Characteristics

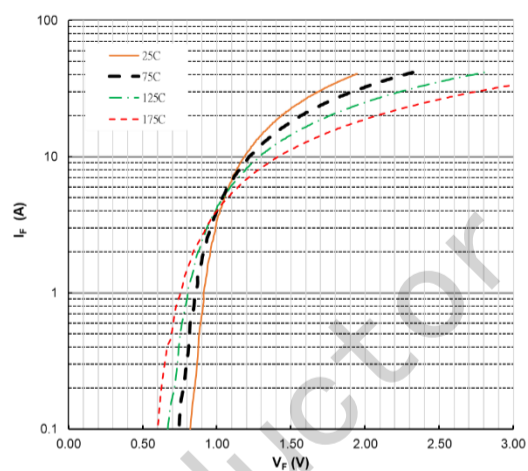


Figure 3. Reverse Characteristics

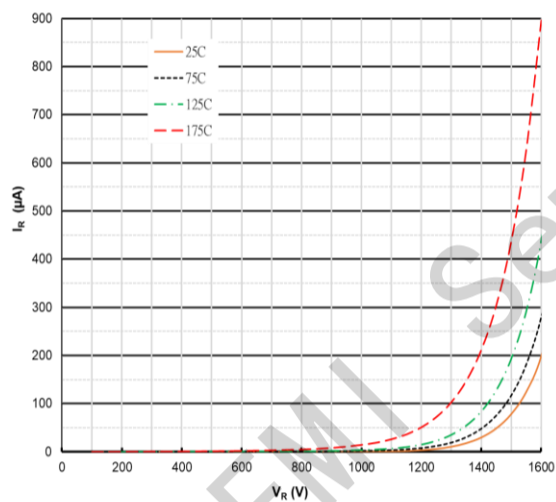


Figure 4. Power Derating

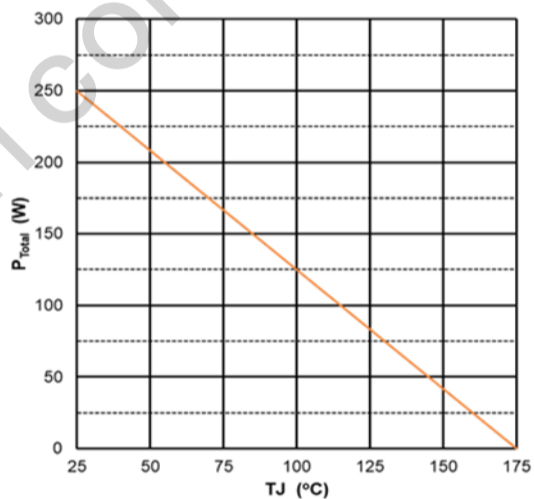


Figure 5. Reverse charge vs. Reverse Voltage

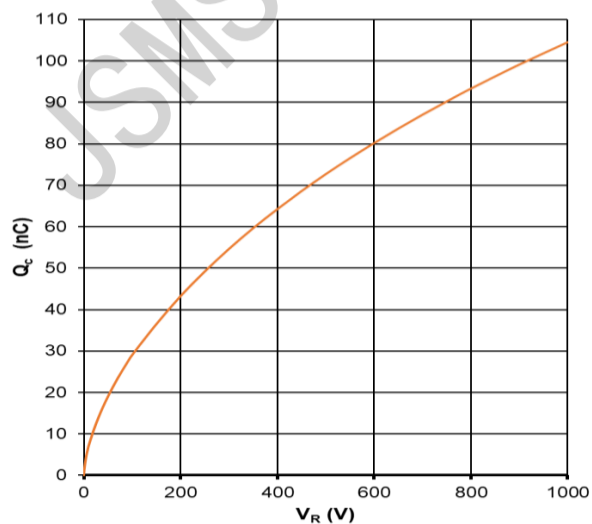
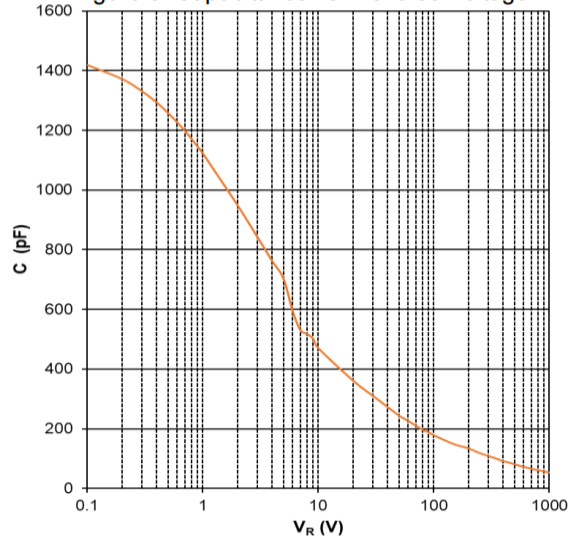
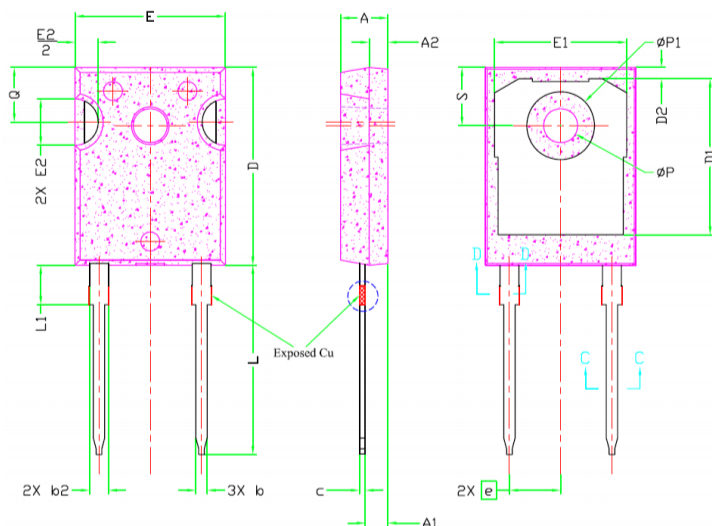


Figure 6. Capacitance vs. Reverse Voltage



Package Dimensions

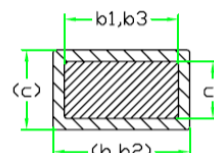
(TO-247-2 Package)



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
ØP	3.56	3.61	3.65	7
ØP1	7.19REF.			
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	



- Note:
1. Package Reference: JEDEC TO247, Variation AD.
 2. All Dimensions Are In mm.
 3. Slot Required, Notch May Be Rounded
 4. Dimension D & E Do Not Include Mold Flash. Mold Flash Shall Not Exceed 0.127mm Pre Side. These Dimensions Are Measured At The Outmost Extreme Of The Plastic Body.
 5. Thermal Pad Contour Optional Within Dimension D1 & E1.
 6. Lead Finish Uncontrolled In L1.
 7. ØP To Have A Maximum Draft Angle Of 1.5° To The Top Of The Part With A Maximum Hole Diameter Of 3.91mm.
 8. Dimension "b2" And "b4" Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.10mm Total In Excess Of "b2" And "b4" Dimension At Maximum Material Condition.



Section C--C,D--D