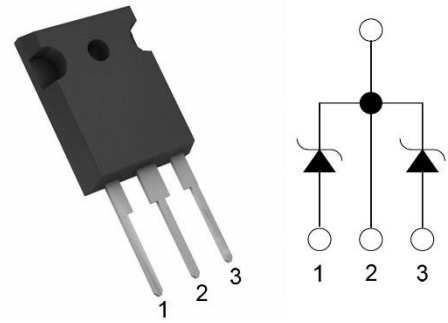


Product Summary

$V_R = 650\text{ V}$
 $I_F = 20\text{ A}$ ($T_C=150^\circ\text{C}$) **
 $Q_C = 49\text{ nC}$ ($V_R=400\text{ V}$) **



TO-247-3

Features

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

Benefits

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

Applications

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

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

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Peak Reverse Surge Voltage	V_{RSM}		650	V
DC Blocking Voltage	V_R		650	V
Continuous Forward Current (per leg / per device)	I_F	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=150^\circ\text{C}$	30/60 14/28 10/20	A
Non repetitive Forward Surge Current *	I_{FSM}	$T_C = 25^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse $T_C = 110^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse $T_C = 25^\circ\text{C}$, $t_p=10\text{ us}$, Square Pulse	65 55 500	A
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 $T_C = 110^\circ\text{C}$, $t_p=10\text{ ms}$, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	55 45	A
Total power dissipation (per leg / per device)	P_D	$T_C=25^\circ\text{C}$	100	W
Operating Junction Temperature	T_J		-55 to 175	$^\circ\text{C}$
Storage Temperature	T_{STG}		-55 to 175	$^\circ\text{C}$

Note : * Per leg ** Per device

Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage *	V_{DC}	$T_J = 25^\circ C$	650			V
Forward Voltage *	V_F	$I_F = 10A, T_J = 25^\circ C$		1.45	1.75	V
		$I_F = 10A, T_J = 125^\circ C$		1.6		
		$I_F = 10A, T_J = 175^\circ C$		1.7		V
Reverse Current *	I_R	$V_R = 650V, T_J = 25^\circ C$		10	80	μA
		$V_R = 650V, T_J = 125^\circ C$		40		μA
		$V_R = 650V, T_J = 175^\circ C$		110		μA
Total Capacitive Charge *	Q_C	$V_R = 400V, T_J = 25^\circ C$		24.5		nC
Total Capacitance *	C	$V_R = 1V, T_J = 25^\circ C,$ Freq = 1MHz		405		pF
		$V_R = 200V, T_J = 25^\circ C,$ Freq = 1MHz		48		
		$V_R = 400V, T_J = 25^\circ C,$ Freq = 1MHz		35		

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 (per device)	$R_{th(j-c)}$	junction-case		0.75		$^\circ C/W$

Note : * Per leg ** Per device

Typical Electrical Curves (Per Leg)

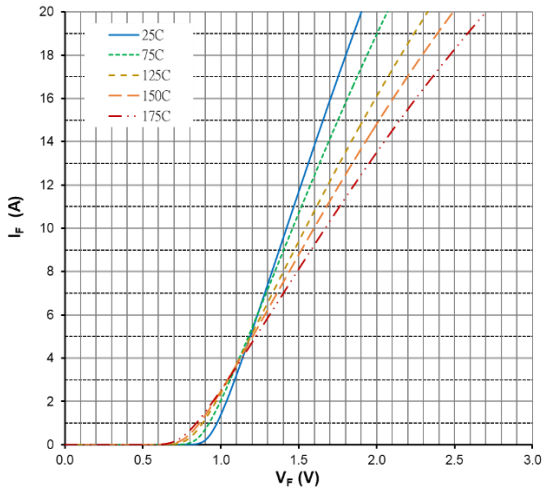


Figure 1. Forward Characteristics

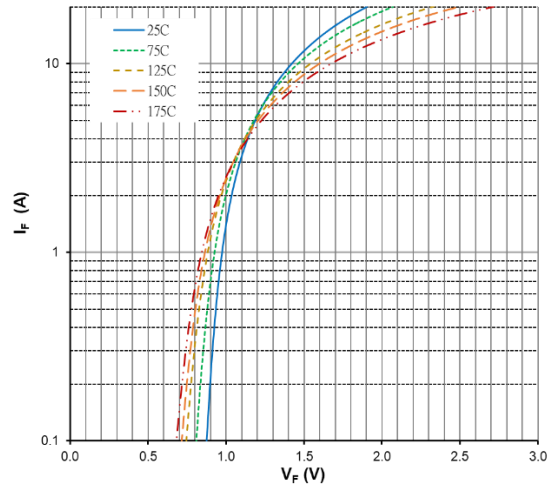


Figure 2. Forward Characteristics

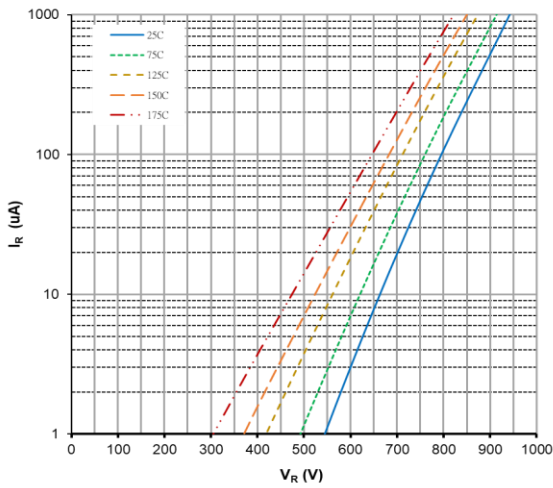


Figure 3. Reverse Characteristics

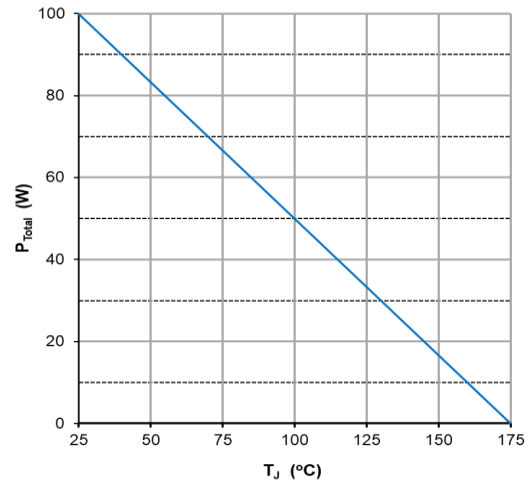


Figure 4. Power Derating

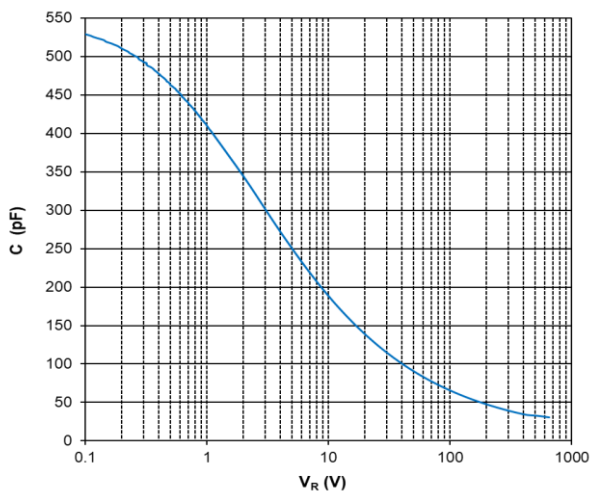


Figure 7. Capacitance vs. V_R

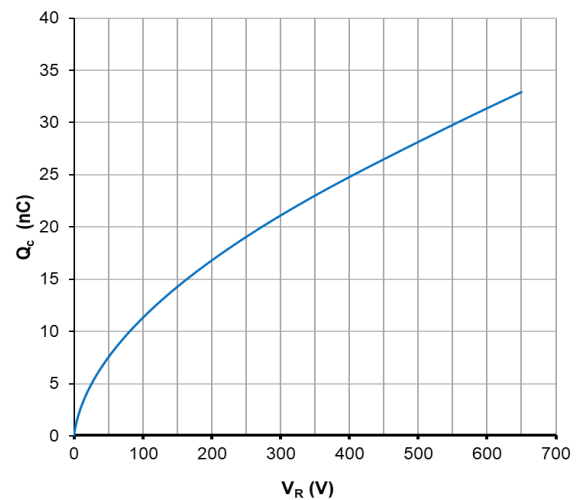
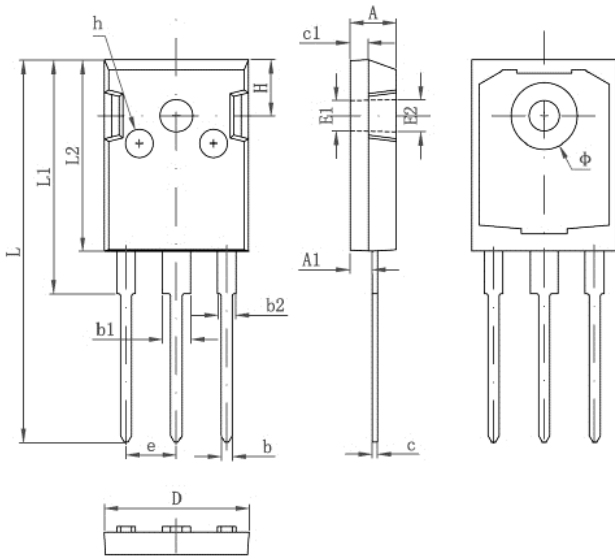


Figure 8. Capacitive Charge vs. V_R

Package Dimensions

(TO-247-3 Package)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF		0.138 REF	
E2	3.600 REF		0.142 REF	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP		0.215 TYP	
H	5.980 REF		0.235 REF	
h	0.000	0.300	0.000	0.012