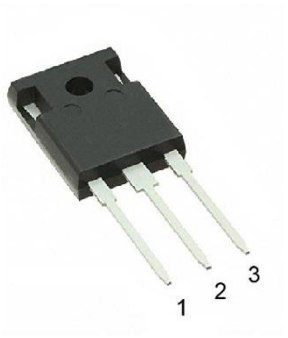
Product Summary

V_R = 650 V

I_F = 30A (T_C=150°C) **

Qc = 68nC (V_R=400V) **



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 Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies

Maximum Ratings (T_C=25°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°C T_C=135°C T_C=150°C	40/80 20/40 15/30	A
Non repetitive Forward Surge Current *	I_{FSM}	T_C = 25°C, t_p=10 ms, Half Sine Pulse T_C = 110°C, t_p=10 ms, Half Sine Pulse T_C = 25°C, t_p=10 us, Pulse	90 80 500	A
Repetitive peak Forward Surge Current *	I_{FRM}	T_C = 25°C, t_p=10 ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse T_C = 110°C, t_p=10 ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	80 70	A
Total power dissipation (per leg / per device)	P_D	T_C=25°C	188/376	W
Operating Junction Temperature	T_J		-55 to 175	°C
Storage Temperature	T_{STG}		-55 to 175	°C

Note : * Per leg ** Per device

Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage *	V_{DC}	T_J = 25°C	650			V
Forward Voltage *	V_F	I_F = 15A, T_J = 25°C		1.4	1.75	V
		I_F = 15A, T_J = 125°C		1.55		
		I_F = 15A, T_J = 175°C		1.7		V
Reverse Current *	I_R	V_R = 650V, T_J = 25°C		2	80	uA
		V_R = 650V, T_J = 125°C		8		uA
		V_R = 650V, T_J = 175°C		25		uA
Total Capacitive Charge *	Q_C	V_R = 400V, T_J = 25°C		34		nC
Total Capacitance *	C	V_R = 1V, T_J = 25°C, Freq = 1MHz		570		pF
		V_R = 200V, T_J = 25°C, Freq = 1MHz		65		
		V_R = 400V, T_J = 25°C, Freq = 1MHz		51		

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		0.4		°C/W

Note : * Per leg ** Per device

Typical Electrical Curves (Per Leg)

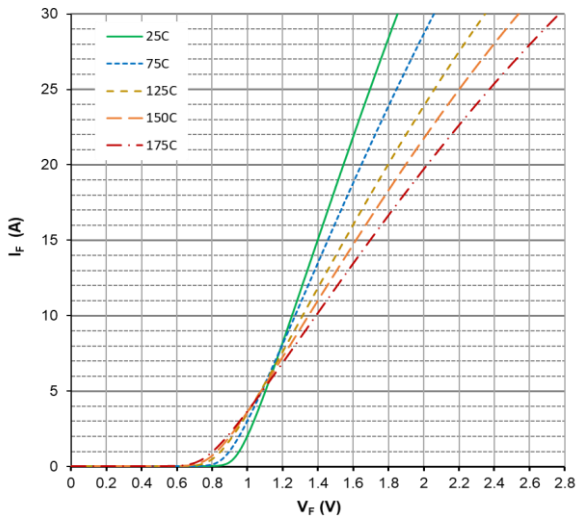


Figure 1. Forward Characteristics

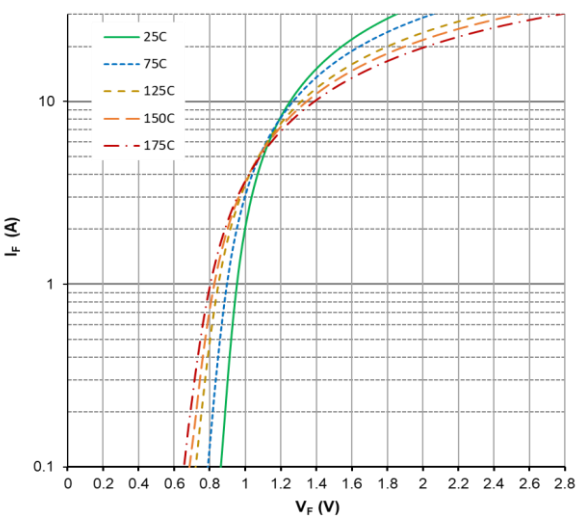


Figure 2. Forward Characteristics

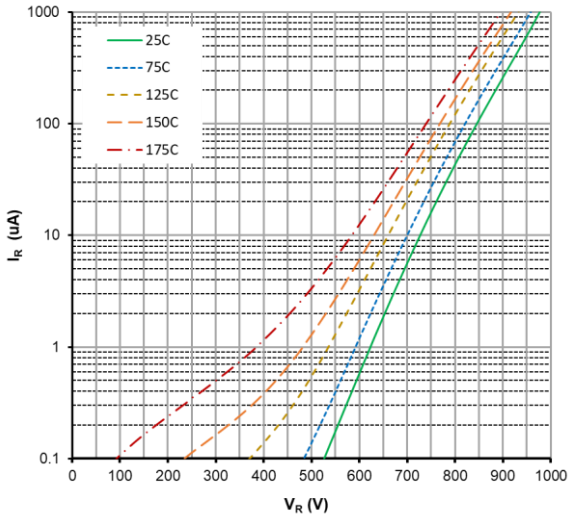


Figure 3. Reverse Characteristics

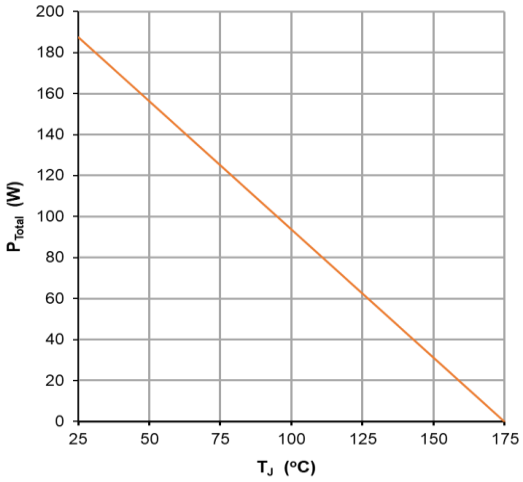


Figure 4. Power Derating

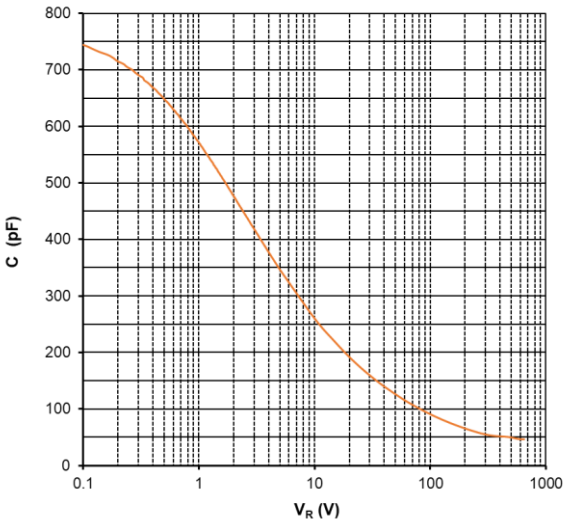


Figure 5. Capacitance vs Reverse Voltage

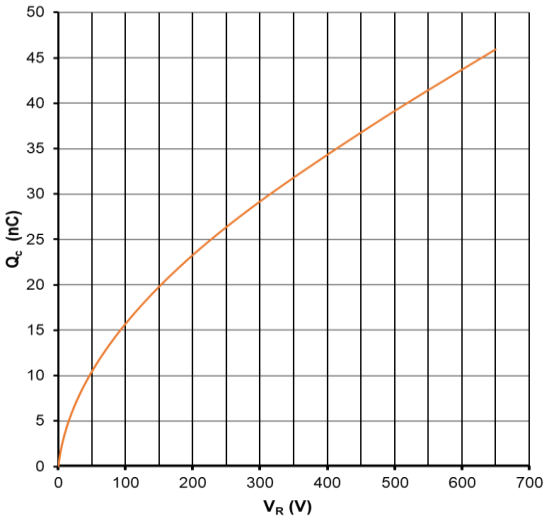
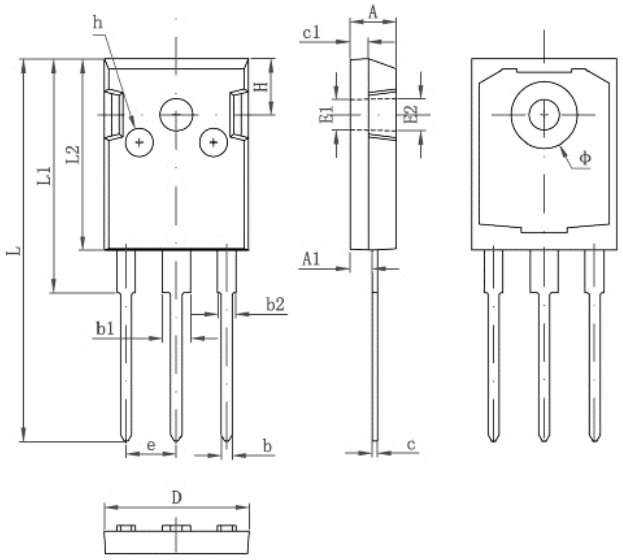


Figure 6. Recovery Charge vs Reverse Voltage

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