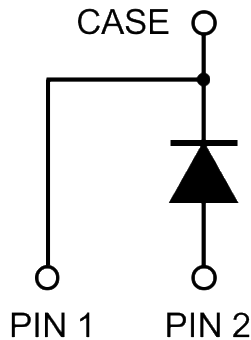


Package TO-263-2L



Inner Circuit



Product Summary

V_R	650 V	
I_F	27A ($T_c=110^\circ\text{C}$)	20A ($T_c=135^\circ\text{C}$)
Q_C	45nC	



Features

- ◆ Low Conduction and Switching Loss
- ◆ Positive Temperature Coefficient on V_F
- ◆ Temperature Independent Switching Behavior
- ◆ Fast Reverse Recovery
- ◆ High Surge Current Capability
- ◆ Pb-free lead plating

Benefits

- ◆ Higher System Efficiency
- ◆ Parallel Device Convenience
- ◆ High Temperature Application
- ◆ High Frequency Operation
- ◆ Hard Switching & High Reliability
- ◆ Environmental Protection

Applications

- ◆ SMPS
- ◆ PFC
- ◆ Solar/ Wind Renewable Energy
- ◆ Power Inverters
- ◆ Motor Drives
- ◆ UPS

Maximum Ratings

Parameter	Symbol	Test Conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	$T_J = 25^\circ\text{C}$	650	V
Peak Reverse Surge Voltage	V_{RSM}	$T_J = 25^\circ\text{C}$	650	V
DC Blocking Voltage	V_R	$T_J = 25^\circ\text{C}$	650	V
Continuous Forward Current	I_F	$T_C = 25^\circ\text{C}$	44	A
		$T_C = 110^\circ\text{C}$	27	A
		$T_C = 135^\circ\text{C}$	20	A

Maximum Ratings

Parameter	Symbol	Test Conditions	Value	Unit
Non-Repetitive Peak Forward Surge Current	I _{FSM}	T _C = 25°C, T _P = 10 ms Half Sine Wave	150	A
		T _C = 125°C, T _P = 10 ms Half Sine Wave	129	A
		T _C = 25°C, T _P = 10 μs Pulse	851	A
Repetitive Peak Forward Surge Current	I _{FRM}	T _C = 25°C, T _P = 10 ms Half Sine Wave, D = 0.1	99	A
		T _C = 125°C, T _P = 10 ms Half Sine Wave, D = 0.1	91	A
Power Dissipation	P _D	T _C = 25°C	136	W
		T _C = 125°C	45	W
Operating Junction and Storage Temperature	T _J		175	°C
	T _{stg}		-55 to 175	°C
Thermal Resistance Junction to Case	R _{θJC}		1.1	°C/W

Electrical Characteristics

Parameter	Symbol	Test Conditions	Typ.	Max.	Unit
DC Blocking Voltage	V _{DC}	I _R = 500 μA, T _J = 25°C	> 650		V
Forward Voltage	V _F	I _F = 20A, T _J = 25°C	1.5	1.8	V
		I _F = 20A, T _J = 175°C	1.9	2.2	V
Reverse Current	I _R	V _R = 650V, T _J = 25°C	5	100	μA
		V _R = 650V, T _J = 175°C	75	500	μA
Total Capacitive Charge	Q _C	I _F = 20A, dI/dt=300A/μs, V _R =400V, T _J =25°C	45		nC
Total Capacitance	C	V _R =1V, T _J =25°C, f=1 MHz	857		pF
		V _R =200V, T _J =25°C, f=1 MHz	121		
		V _R =400V, T _J =25°C, f=1 MHz	119		

Device Performances

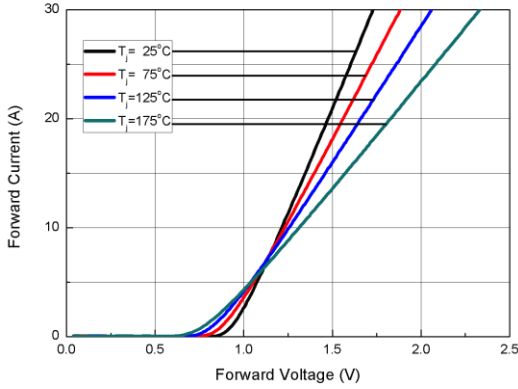


Fig. 1 Forward Characteristics

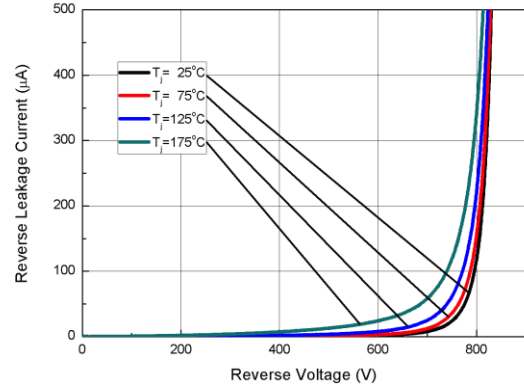


Fig. 2 Reverse Characteristics

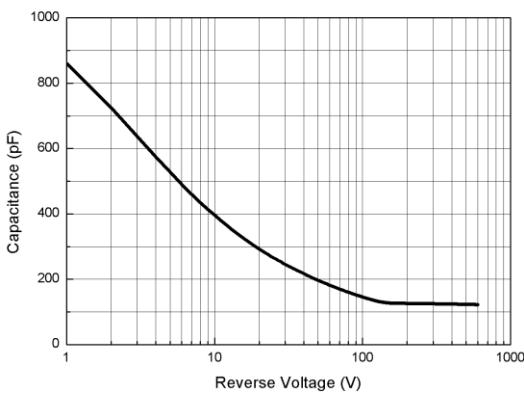


Fig. 3 Capacitance vs. Reverse Voltage

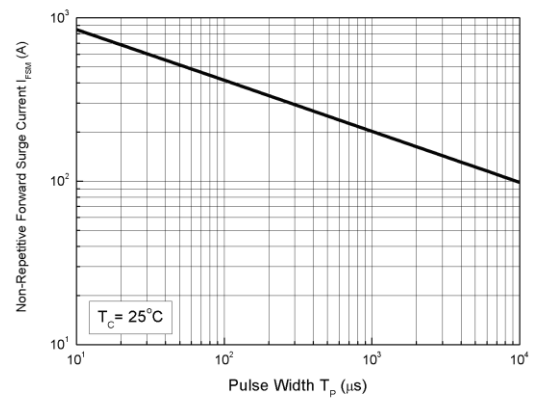


Fig. 4 Non-Repetitive Peak Forward Surge Current (Pulse Mode)

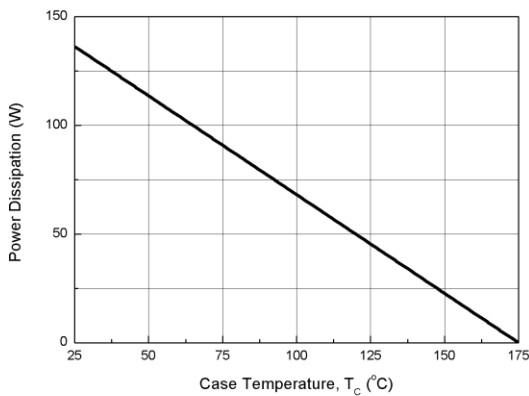


Fig. 5 Power Derating

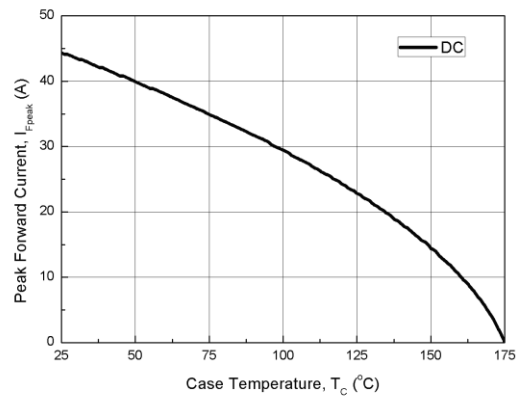
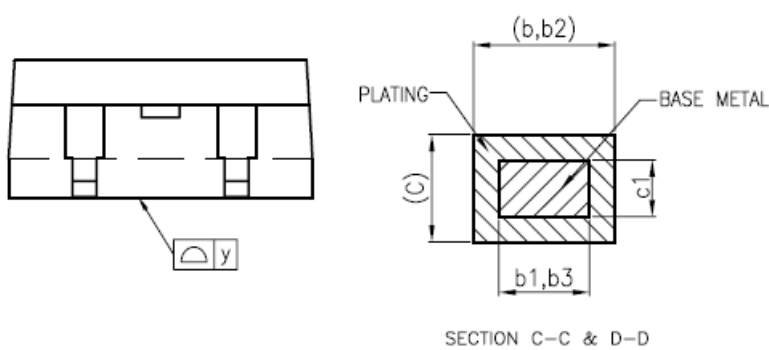
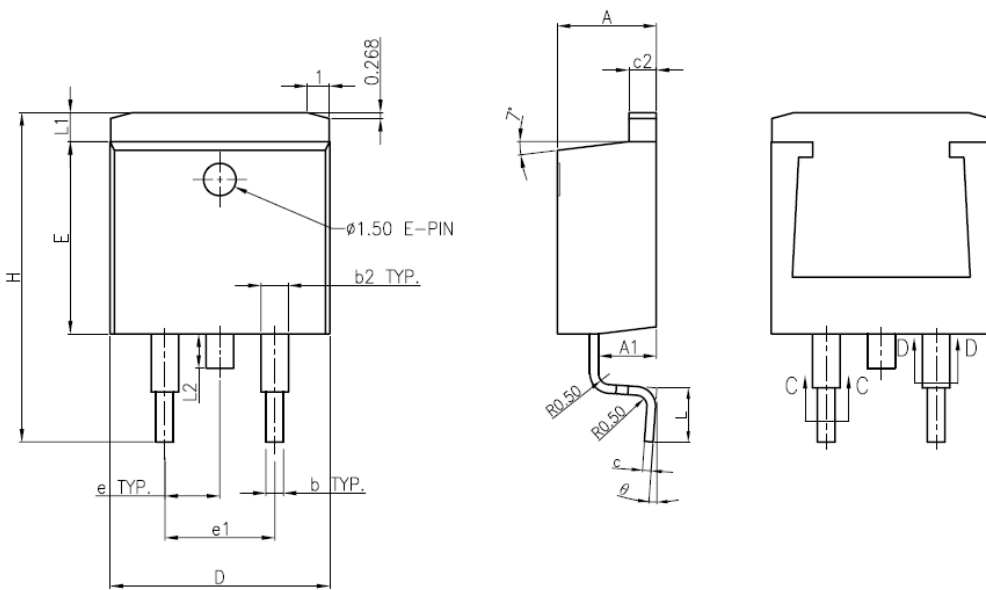


Fig. 6 Current Derating

Package Dimensions TO-263-2L



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.470	—	4.670	0.176	—	0.184
A1	2.520	—	2.820	0.099	—	0.111
b	0.710	0.813	0.910	0.028	0.032	0.036
b1	0.710	—	0.910	0.028	—	0.036
b2	1.170	1.270	1.370	0.046	0.050	0.054
b3	1.170	—	1.370	0.046	—	0.054
c	0.279	—	0.483	0.011	—	0.019
c1	0.279	0.380	0.432	0.011	0.015	0.017
c2	1.170	—	1.370	0.046	—	0.054
D	10.010	—	10.310	0.394	—	0.406
E	8.763	8.890	9.017	0.345	0.350	0.355
E1	10.40	10.552	10.654	0.484	0.490	0.494
e	—	2.54 BSC	—	—	0.100 BSC	—
e1	4.980	—	5.180	0.196	—	0.204
H	15.00	—	15.85	0.590	—	0.624
L	2.29	2.54	2.79	0.090	0.100	0.110
L1	1.27	—	1.40	0.050	—	0.055
L2	1.30	—	1.75	0.051	—	0.069
y	0	—	0.075	0	—	0.003
θ	0°	—	8°	0°	—	8°