

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Voltage	$V_{DRM}-V_{RRM}$	2200 to 2800	Volts
Average On-State Current, $T_C=70^{\circ}C$	$I_{T(Avg.)}$	3200	A
RMS On-State Current, $T_C=70^{\circ}C$	$I_{T(RMS)}$	5027	A
Average On-State Current, $T_C=55^{\circ}C$	$I_{T(Avg.)}$	3800	A
RMS On-State Current, $T_C=55^{\circ}C$	$I_{T(RMS)}$	5969	A
Peak One Cycle Surge Current, 60Hz, $V_R=0V$	I_{TSM}	77,000	A
Peak One Cycle Surge Current, 50Hz, $V_R=0V$	I_{TSM}	72,000	A
Fuse Coordination I^2t , 60Hz	I^2t	2.47E+07	A ² s
Fuse Coordination I^2t , 50Hz	I^2t	2.59E+07	A ² s
Critical Rate-of-Rise of On-State Current	di/dt	200	A/us
Repetitive			
Critical Rate-of-Rise of On-State Current	di/dt	400	A/us
Non-Repetitive			
Peak Gate Power, 100us	P_{GM}	16	Watts
Average Gate Power	$P_{G(avg)}$	5	Watts
Operating Temperature	T_j	-40 to+125	$^{\circ}C$
Storage Temperature	$T_{Stg.}$	-50 to+150	$^{\circ}C$
Approximate Weight		3.2	lb
		1.45	Kg
Mounting Force		12,000-15,000	lbs
		53 - 67	Knewtons

Information listed is based upon Powerex testing and projected ratings and is subject to change without notice. Powerex makes no implicit or explicit claim to reliability, capability, performance or suitability of this product for a users application. Powerex makes no guarantee of future availability of this product.

Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Forward Leakage Current	I_{DRM}	Tj=125°C, V_{DRM} =Rated			250	ma
Repetitive Peak Reverse Leakage Current	I_{RRM}	Tj=125°C, V_{RRM} =Rated			250	ma
Peak On-State Voltage	V_{TM}	Tj=125°C, I_{TM} =3000A			1.45	V
V_{TM} Model, Low Level	V_0	Tj=125°C			1.062	V
$V_{TM} = V_0 + r \cdot I_{TM}$	r	15% $I_{TM} - \pi \cdot I_{TM}$			0.121	mΩ
V_{TM} Model, High Level	V_0	Tj=125°C			1.088	V
$V_{TM} = V_0 + r \cdot I_{TM}$	r	$\pi \cdot I_{TM} - I_{TSM}$			0.1139	mΩ
V_{TM} Model, 4-Term	A	Tj=125°C			0.161	
$V_{TM} = A + B \cdot \ln(I_{TM}) +$	B	15% $I_{TM} - I_{TSM}$			0.151	
$C \cdot (I_{TM}) + D \cdot (I_{TM})^{1/2}$	C				0.000124	
	D				-0.00538	
Turn-On Delay Time	t_d	$V_D = 0.5 \cdot V_{DRM}$ Gate Drive: 40V - 20Q			2.5	us
Turn-Off Time	t_q	Tj=125°C dv/dt = 20V/us to 80% V_{DRM}			400	us
dv/dt _(Crit)	dv/dt	Tj=125°C Exp. Waveform $V_D = 80\%$ Rated	1000			V/us
Gate Trigger Current	I_{GT}	Tj=25°C $V_D = 12V$	30	100	250	ma
Gate Trigger Voltage	V_{GT}		0.8	2.0	4.5	V
Peak Reverse Gate Voltage	V_{GRM}				5	V

Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Thermal Resistance						
Junction to Case	$R\theta_{jc}$	Double side cooled		0.007	0.008	°C/Watt
Case to Sink	$R\theta_{cs}$	Double side cooled		0.0015	0.002	°C/Watt

Thermal Impedance Model $Z\theta_{jc}$ Double side cooled

$$Z\theta_{jc}(t) = \sum(A(N) \cdot (1 - \exp(-t/\text{Tau}(N))))$$

where:	N =	1	2	3	4
	A(N) =	1.43E-04	9.08E-04	2.37E-03	4.60E-03
	Tau(N) =	2.62E-03	2.31E-02	5.00E-01	8.00E+00