POWERSONIC TECHNOLOGY LTD.

CMDS400I -100L

CE High Power Products

Schottky Rectifier ,400A

Features

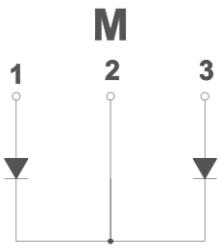
- 175˚C T_J operation
- Centertapmodule
- Lo forward voltage drop
- Guard ring for enhanced ruggedness and Long term reliability
- Lead(pb)-free
- Designed and qualified for industrial level

Typical Applications

- High current switching power supplies
- Plating power supplies
- UPS system
- Comverters
- Freewheeling
- Welder
- Reverse battery protection

C3 Package

TO-244 (insulated)



Major Ratings and Characteristics			
Symbol	**Characteristics**	**Values**	**Unit**
$I_{F(AV)}$	Rectangular waveform	400	A
V_{RRM}		100	V
I_{FSM}	T_P=5us sine	25000	A
V_F	100A_{PK} T_J=125˚C(per leg)	0.55	V
T_J	Range	-55 to 175	˚C

Absolute Maximum Ratings					
Parameters	**Symbol**	**Test Conditions**		**Values**	**Unit**
Maximum average forward Current — per leg	$I_{F(AV)}$	50% duty cycle at T =142˚C, rectangular waveform		200	A
Maximum average forward Current — per device				400	
Maximum peak one cycle non-repetitive surge current per leg	I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} Applied	25000	A
		10 ms sine or 6 ms rect. pulse		3000	
Non- repetitive avalanche energy per leg	E_{AS}	TJ=25˚C, I_{AS}=13A, L=0.2mH		15	mJ
Repetitive avalanche current per leg	I_{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T_J maximum VA=1.5×V typical		1	A

Electrical Specifications					
Parameters	**Symbol**	**Test Conditions**		**Values**	**Unit**
Maximum forward voltage drop per leg	V_{FM}(1)	200A	T_J=25˚C	0.65	A
		400A		0.85	
		200A	T_J=125˚C	0.55	
		400A		0.75	
Maximum reverse leakage current per leg	I_{RM}(1)	T_J=25˚C	V_R=Rated V_R	0.5	mA
		T_J=125˚C		40	
Threshold voltage	$V_{F(TO)}$	T_J= T_J Maximum		0.5	V
Forward slope resistance	r_t			1.08	mΩ
Maximum junction capacitance per leg	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MH_Z) 25˚C		4150	pF
Typical series inductance per leg	L_S	From top of termina hole to mounting plane		6.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10000	V/μs
Maximum RMS insulation voltage (for insulated type)	Visol	Ac.50H_Z；R.M.S；1min		2500	V
		Ac.50H_Z；R.M.S；1sec		3500	

Note: (1) Pulse width < 300 μs, duty cycle < 2%

Thermal Mechanical Specifications						
Parameters		**Symbol**	**Min**	**Typ**	**Max**	**Unit**
Maximum junction and storage temperature range		T_J, T_{Stg}	-55	—	175	˚C
Thermal resistance, junction to case per leg	C3(Insulated)	$Rth_{(J-C)}$	—	—	0.26	˚C/W
Thermal resistance, junction to case per module	C3(Insulated)	$Rth_{(C-S)}$	—	—	0.13	
Thermal resistance, case to heatsink			—	0.1	—	
Module(Approximately)	C3(Insulated)	Weight	—	100	—	g
Mounting torque	To terminals(M6)	Mt	4		5.8	Nm
	To heatsink(M6)	Ms	4		6	

Performance Curves

Fig.1 Maximum forward voltage drop Characteristics(Per Leg)

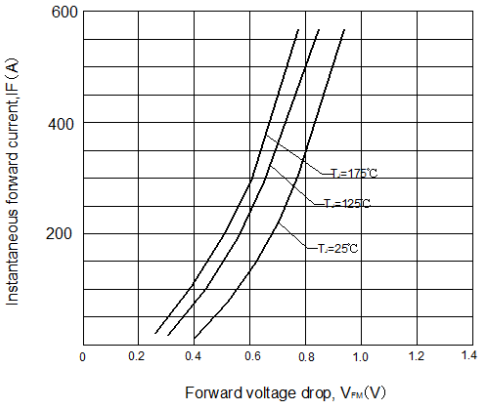


Fig.2 Typical Junction Capacitance vs reverse Voltage(Per leg)

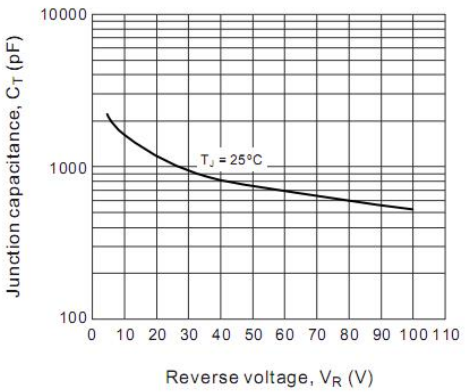


Fig.3 Maximum thermal impedance Rth(j-c) characteristics

(Per Leg, for TO-244 insulated)

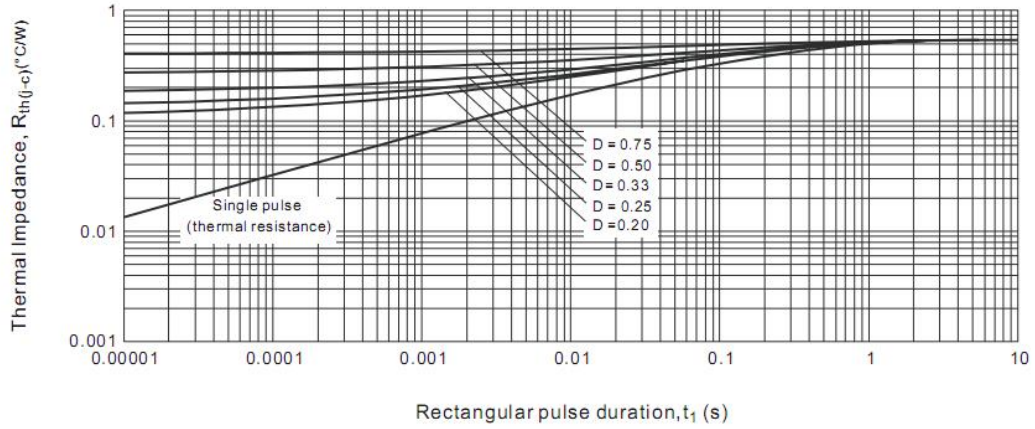


Fig.4 Maximum allowable case temperature Vs.Average forward current (Per Leg)

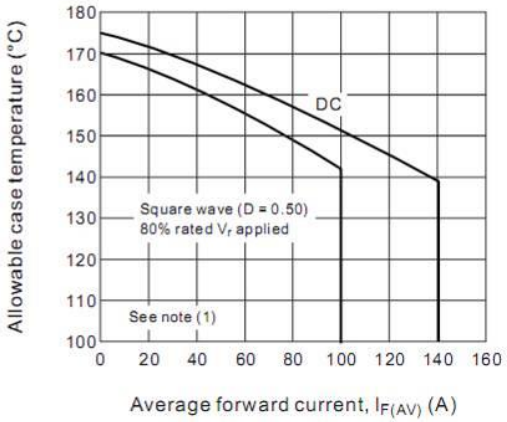


Fig.5 Forward power loss characteristics (Per Leg)

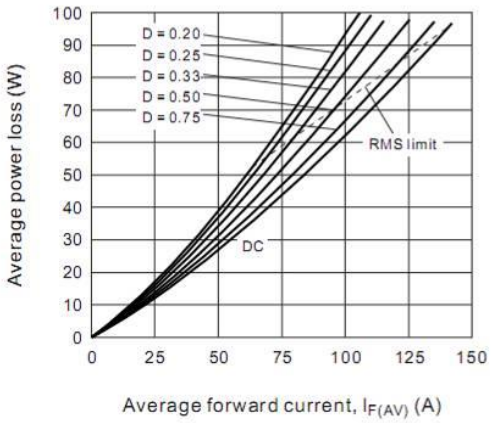


Fig.6 Maximum non-repetitive sutge current (Per Leg)

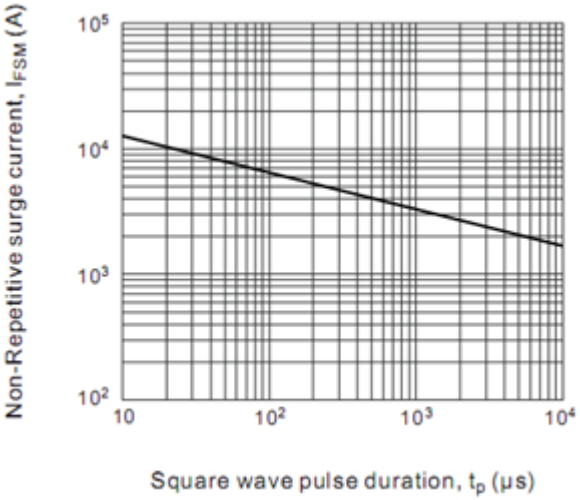
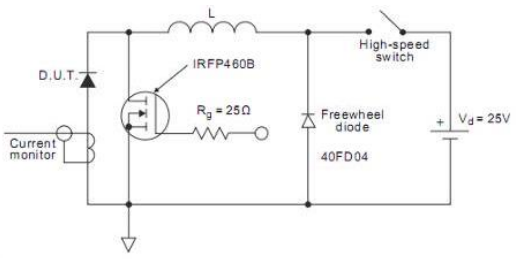


Fig.7 Unclampen Inductive test circuit



Note

(1) Formula used: $T_C = T_J - (Pd+Pd_{REV}) \times R_{thJC}$;

Pd = Forward power loss = $I_{F(AV)} \times V_{FM}$ at($I_{F(AV)}$/D)(see fig.6)

Pd_{REV} = Inverse power loss = $V_{R1} \times I_R$ (1-D); I_R at V_{R1} = 80% rated V_R

Ordering Information Tabel

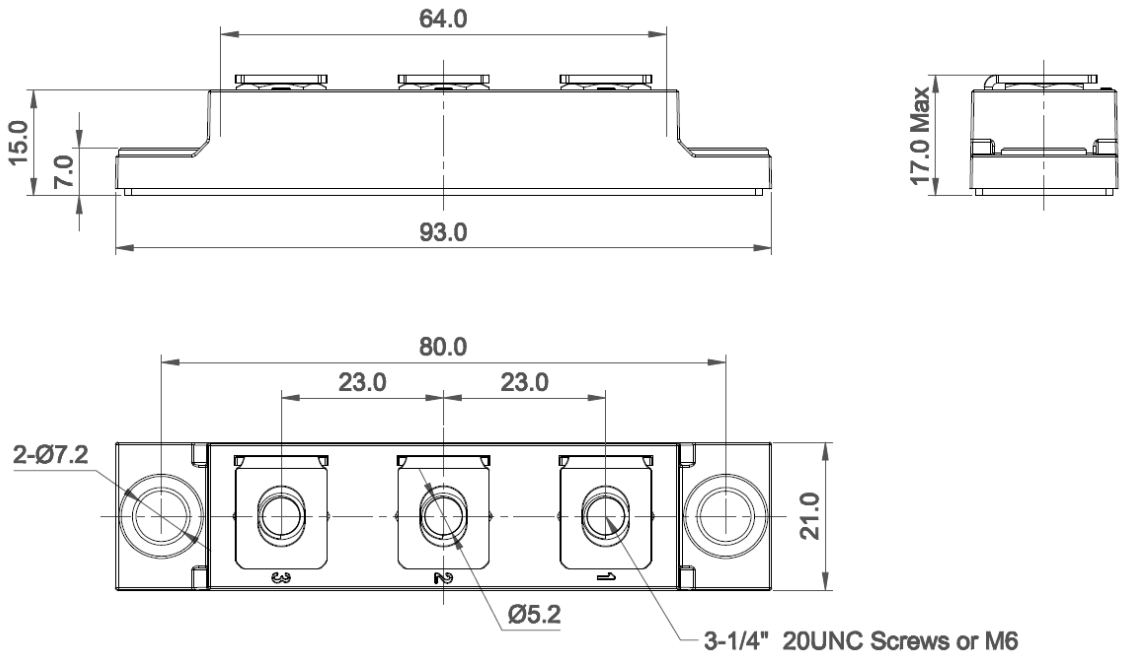
Device code

C M DS 400 I - 100 L

- C: CE's power module
- M: For common cathode configuration
- DS: DS for Schottky Barrier Diode
- 400: Maximum average forward current, A
- I: I =Insulated Package
- 100: Voltage rating (100 = 100V)
- L: L =Low VF Schottky diode

Package Outline Information

C3 Package



Dimensions in mm