POWERSONIC TECHNOLOGY LTD.

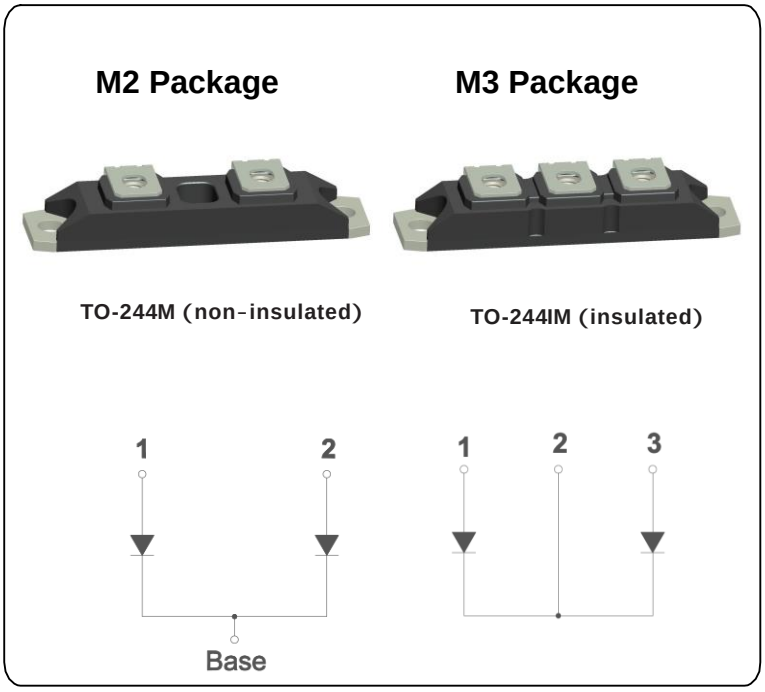
CMDS300(I)M -100/150/200 Series

CE High Power Products

Schottky Rectifier ,300A

Features

- 175℃ 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



Description

The CMDS300(I)…Schottky rectifier common Anode Module series has been optimized for low reverse Leakage at high temperature.
The proprietary barrier technology allows for Reliable operation up to 175℃ junction temperature

Typical Applications

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

Product Summary		
Type	**$I_{F(AV)}$**	**V_R**
CMDS300(I)-100	300A	100 V
CMDS300(I)-150		150 V
CMDS300(I)-200		200 V

Major Ratings and Characteristics			
Symbol	**Characteristics**	**Values**	**Unit**
$I_{F(AV)}$	Rectangular waveform	300	A
V_{RRM}		100/150/200	V
I_{FSM}	T_P=5us sine	22000	A
V_F	100A_{PK} T_J=125℃(per leg)	0.70	V
T_J	Range	-55 to 175	℃

Voltage Ratings					
Parameter	**Symbol**	**CMDS300(I)M-100**	**CMDS300(I)M-150**	**CMDS300(I)M-200**	**Unit**
Maximum DC reverse voltage	V_R	100	150	200	V
Maximum working peak reverse voltage	V_{RWM}	100	150	200	

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		150	A
Maximum average forward Current per device				300	
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	22000	A
		10 ms sine or 6 ms rect. pulse		2500	
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)	150A	T_J=25°C	0.90	V
		300A		1.05	
		150A	T_J=125°C	0.75	
		300A		0.88	
Maximum reverse leakage current per leg	I_{RM}(1)	T_J=25°C	V_R=Rated V_R	2.5	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	C3(Insulated)	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	M2(Non-Iinsulated)	$Rth_{(J-C)}$	—	—	0.28	°C/W
	M3(Insulated)		—	—	0.40	
Thermal resistance, junction to case per module	M2(Non-Iinsulated)	$Rth_{(C-S)}$	—	—	0.14	
	M3(Insulated)		—	—	0.20	
Thermal resistance, case to heatsink			—	0.1	—	
Module(Approximately)	M2(Non-Iinsulated)	Weight	—	85	—	g
	M3(Insulated)			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)

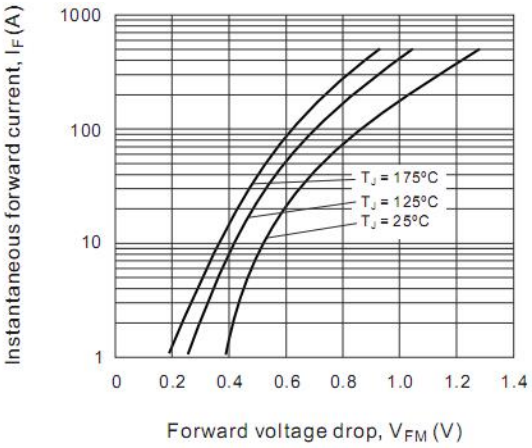


Fig.2 Typical Junction Capacitance vs reverse Voltage(Per leg)

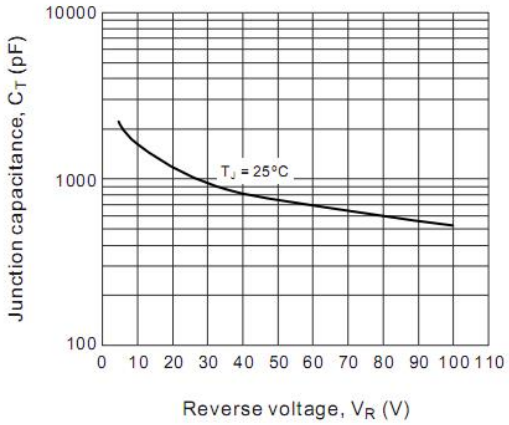


Fig.3-1 Maximum thermal impedance Rth(j-c) characteristics

(Per Leg, for M2)

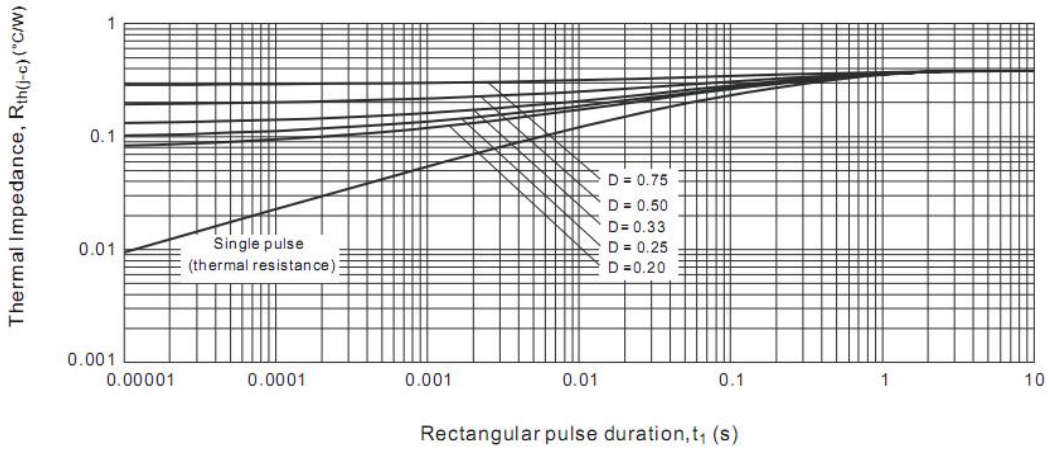


Fig.3-2 Maximum thermal impedance Rth(j-c) characteristics

(Per Leg, for M3)

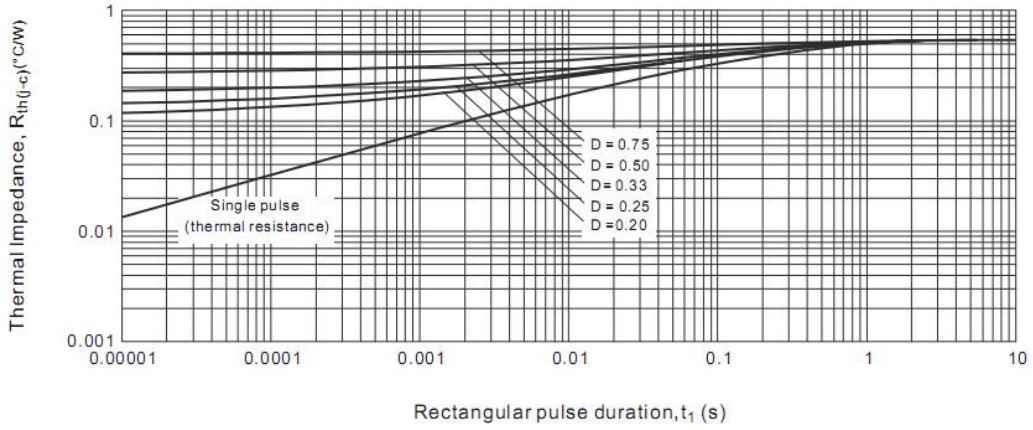


Fig.4 Maximum allowable case temperature Vs.Average forward current (Per Leg)

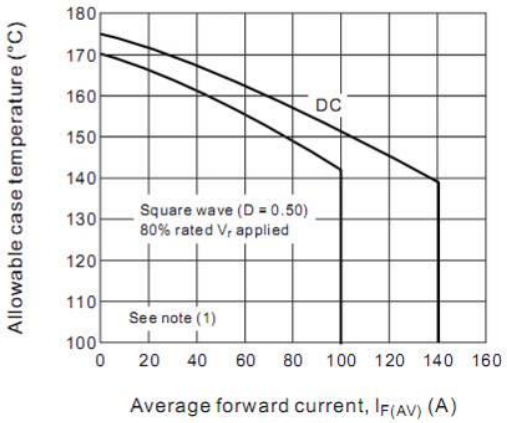


Fig.5 Forward power loss characteristics (Per Leg)

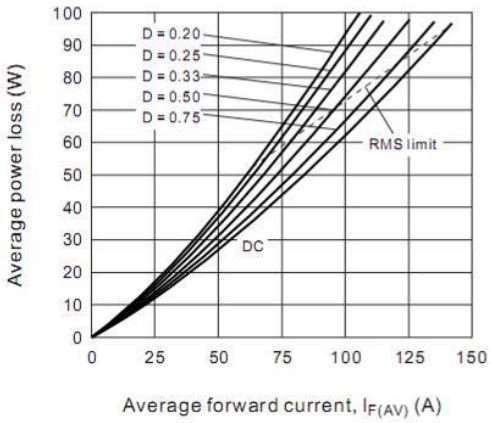


Fig.6 Maximum non-repetitive sutge current (Per Leg)

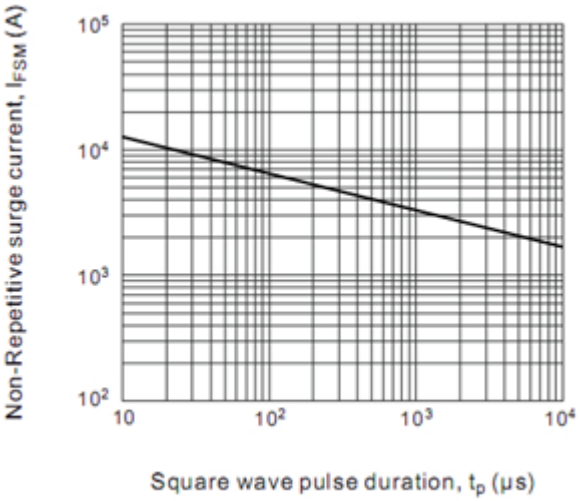
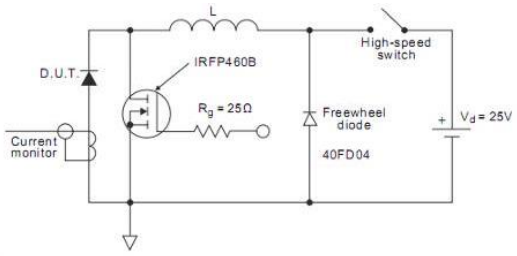


Fig.7 Unclampen Inductive test circuit



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

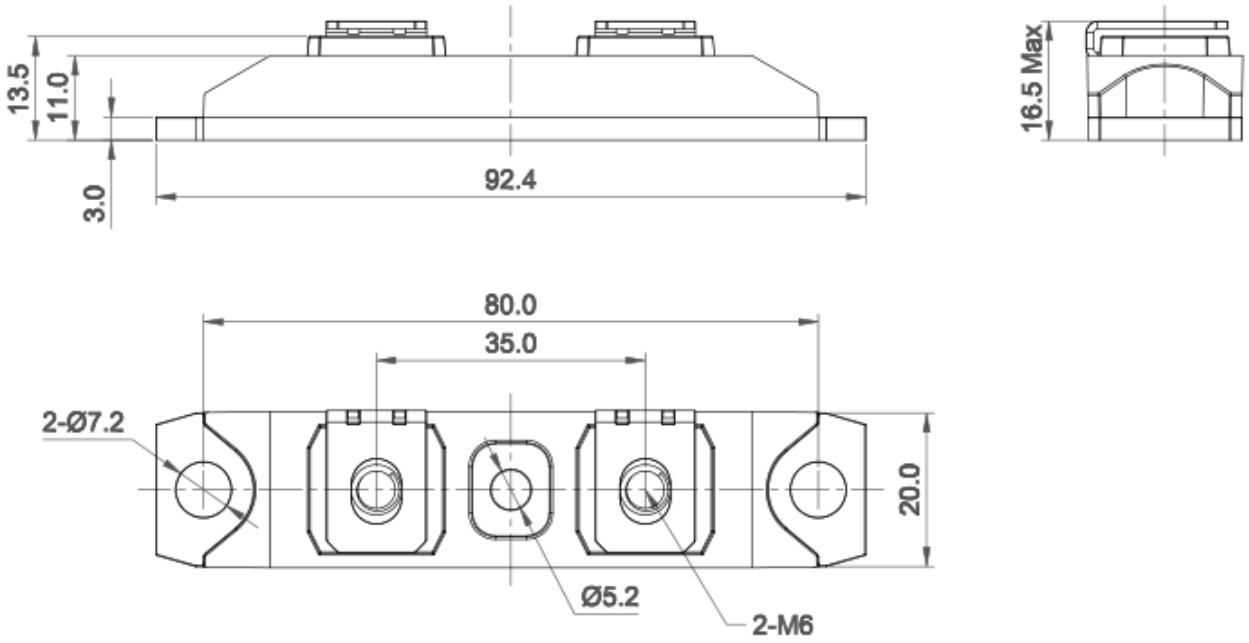
Device code

C M DS 300 I M - 100

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

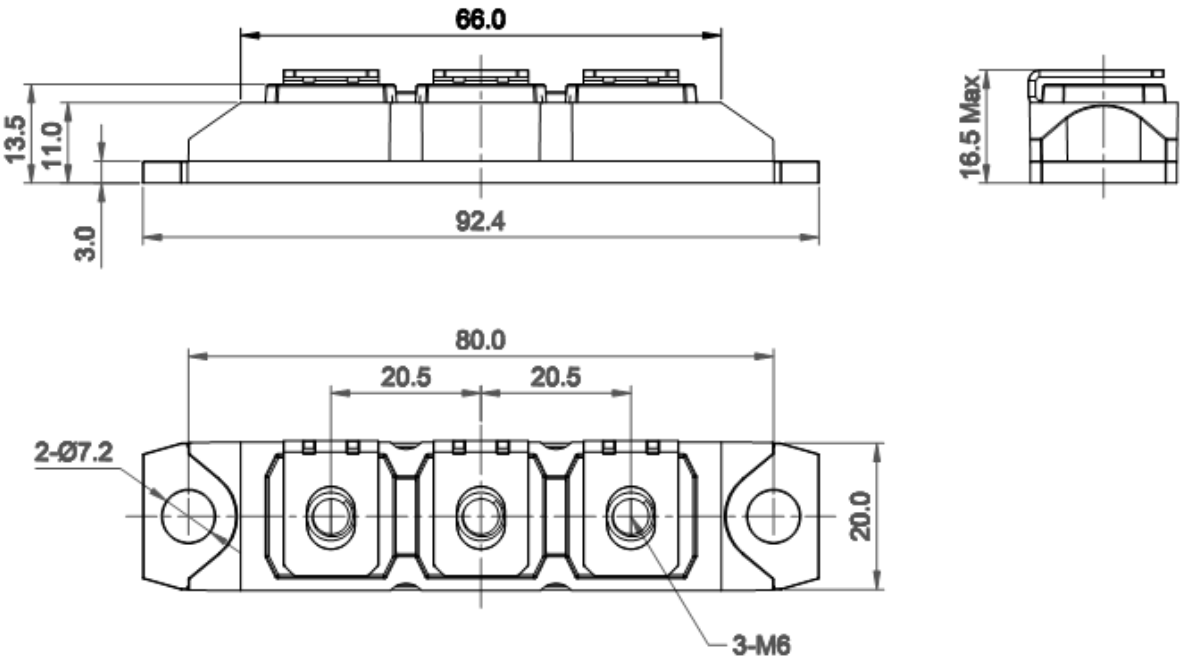
Package Outline Information

M2 Package



Dimensions in mm

M3 Package



Dimensions in mm