

< HIGH VOLTAGE DIODE MODULES >

RM800DG-90F

HIGH POWER SWITCHING USE
INSULATED TYPE

High Voltage Diode Modules

RM800DG-90F



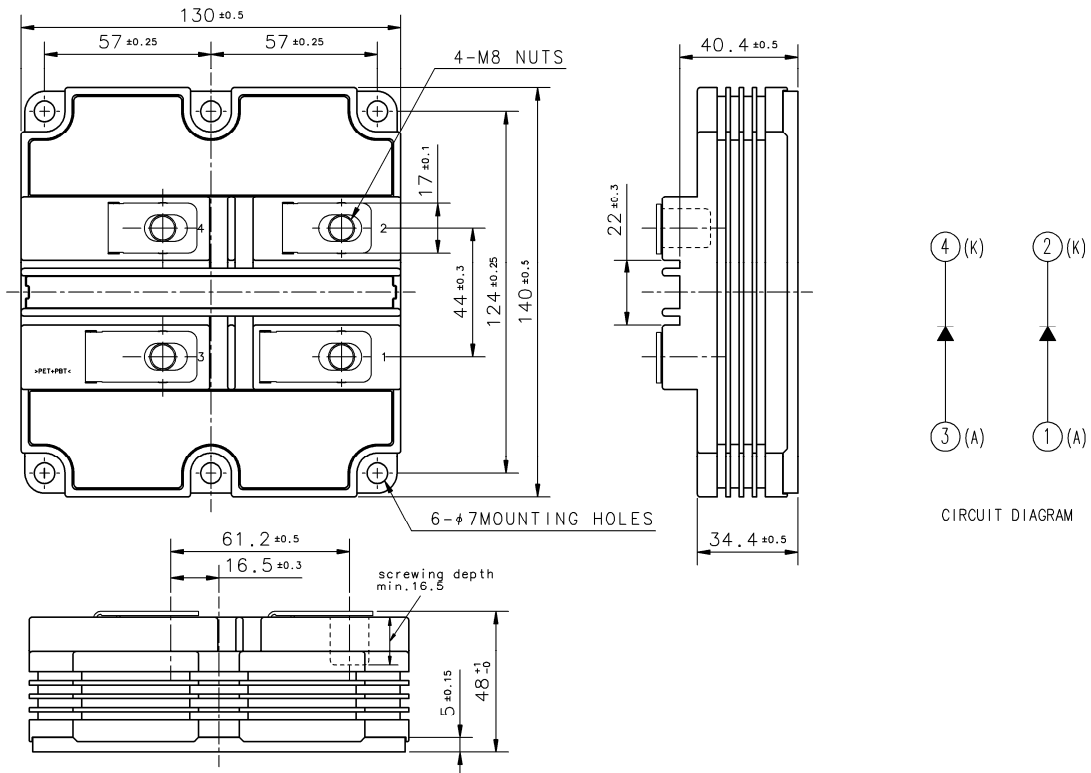
- I_F800A
- V_{RRM}4500V
- 2-element in a Pack
- High insulated Type
- Soft Recovery Diode
- AISiC Baseplate

APPLICATION

Traction drives, High Reliability Converters / Inverters, DC choppers

OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



RM800DG-90F

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INSULATED TYPE

MAXIMUM RATINGS

Symbol	Item	Conditions	Ratings	Unit
V _{RRM}	Repetitive peak reverse voltage	T _j = -40...+125°C	4500	V
		T _j = -50°C	4400	
I _F	Forward current	DC, T _c = 65°C	800	A
I _{FSM}	Surge forward current	T _{j_start} = 125°C, t _p = 10 ms, Half-sine wave, V _R = 0 V	6.5	kA
I _t ²	Surge current load integral		211	kA ² s
P _{tot}	Maximum power dissipation	T _c = 25°C	4160	W
V _{iso}	Isolation voltage	RMS, sinusoidal, f = 60 Hz, t = 1 min.	10200	V
V _e	Partial discharge extinction voltage	RMS, sinusoidal, f = 60 Hz, Q _{PD} ≤ 10 pC	3500	V
T _j	Junction temperature		-50 ~ +150	°C
T _{jop}	Operating junction temperature		-50 ~ +125	°C
T _{stg}	Storage temperature		-55 ~ +125	°C

ELECTRICAL CHARACTERISTICS

Symbol	Item	Conditions	Limits			Unit	
			Min	Typ	Max		
I _{RRM}	Repetitive reverse current	V _{RM} = V _{RRM}	T _j = 25°C	—	—	1.0	mA
			T _j = 125°C	—	3.0	—	
V _{FM}	Forward voltage	I _F = 800 A	T _j = 25°C	—	2.55	—	V
			T _j = 125°C	—	2.85	3.45	
t _{rr}	Reverse recovery time	V _{CC} = 2800 V I _F = 800 A	T _j = 25°C	—	0.70	—	μs
			T _j = 125°C	—	0.90	—	
I _{rr}	Reverse recovery current	V _{CC} = 2800 V I _F = 800 A	T _j = 25°C	—	700	—	A
			T _j = 125°C	—	760	—	
Q _{rr}	Reverse recovery charge	-d _i /d _t = 2600 A/μs @ T _j = 25°C -d _i /d _t = 2400 A/μs @ T _j = 125°C	T _j = 25°C	—	660	—	μC
			T _j = 125°C	—	1040	—	
E _{rec(10%)}	Reverse recovery energy ^(Note 1)	L _s = 150 nH Inductive load	T _j = 25°C	—	0.96	—	J
E _{rec}	Reverse recovery energy		T _j = 125°C	—	1.50	—	
			T _j = 25°C	—	1.10	—	J
			T _j = 125°C	—	1.70	—	

THERMAL CHARACTERISTICS

Symbol	Item	Conditions	Limits			Unit
			Min	Typ	Max	
R _{th(j-c)}	Thermal resistance	Junction to Case (per 1/2 module)	—	—	30.0	K/kW
R _{th(c-s)}	Contact thermal resistance	Case to heat sink, λ _{grease} = 1 W/m ² ·k D _(c-s) = 100 μm (per 1/2 module)	—	24.0	—	K/kW

MECHANICAL CHARACTERISTICS

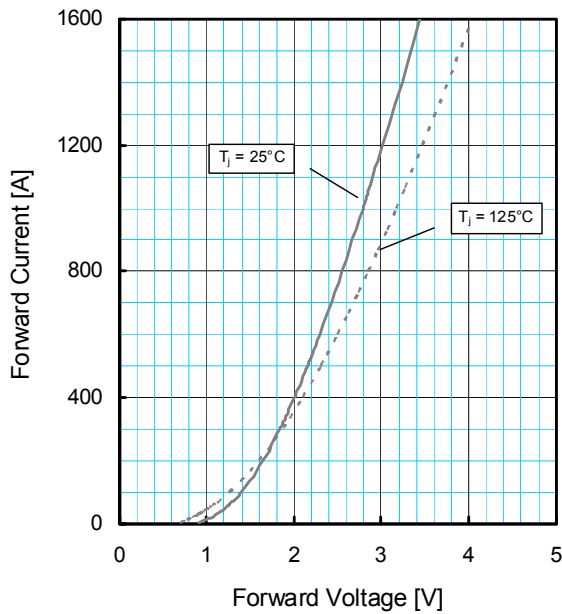
Symbol	Item	Conditions	Limits			Unit
			Min	Typ	Max	
M _t	Mounting torque	M8 : Main terminals screw	7.0	—	22.0	N·m
M _s		M6 : Mounting screw	3.0	—	6.0	N·m
m	Mass		—	1.0	—	kg
CTI	Comparative tracking index		600	—	—	—
d _a	Clearance		26.0	—	—	mm
d _s	Creepage distance		56.0	—	—	mm
L _{PAK}	Parasitic stray inductance		—	22.0	—	nH
R _{AA+KK}	Internal lead resistance	T _c = 25°C	—	0.14	—	mΩ

Note 1. E_{rec(10%)} are the integral of 0.1V_R × 0.1I_F × dt.

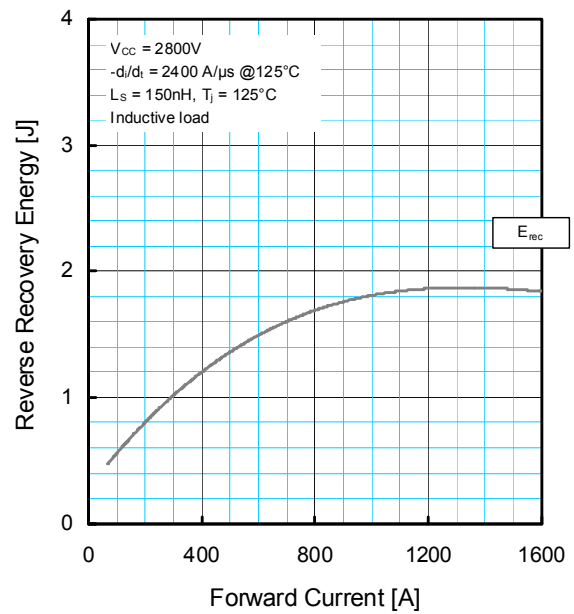
Note 2. Definition of all items is according to IEC 60747, unless otherwise specified.

PERFORMANCE CURVES

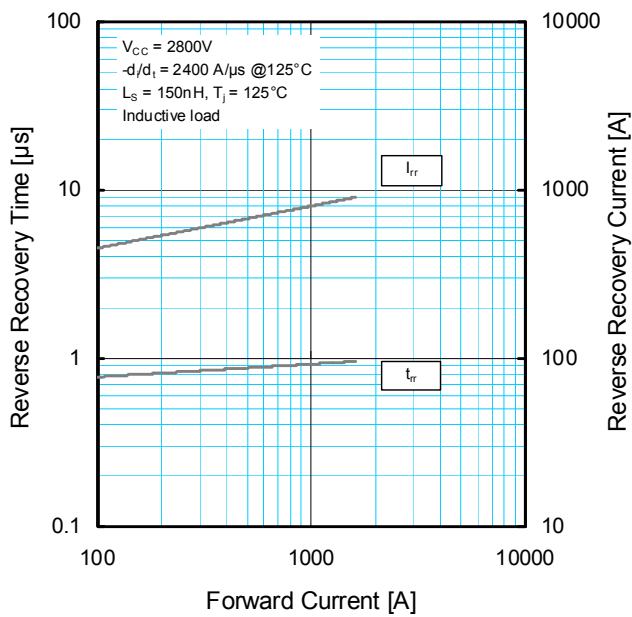
FORWARD CHARACTERISTICS (TYPICAL)



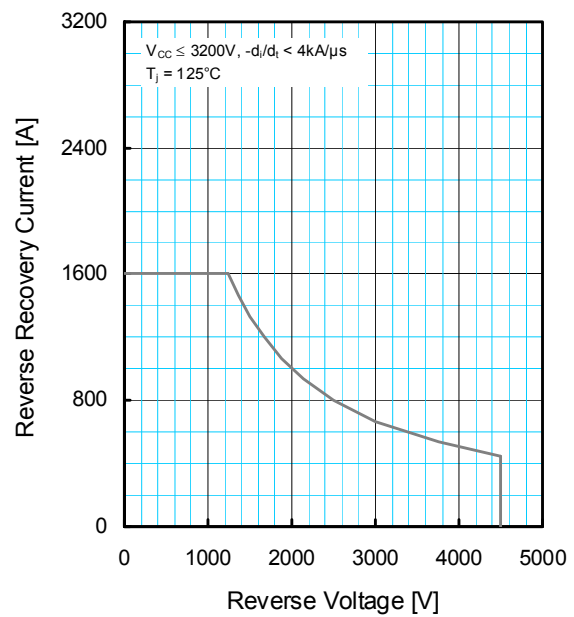
REVERSE RECOVERY ENERGY CHARACTERISTICS (TYPICAL)



REVERSE RECOVERY CHARACTERISTICS (TYPICAL)

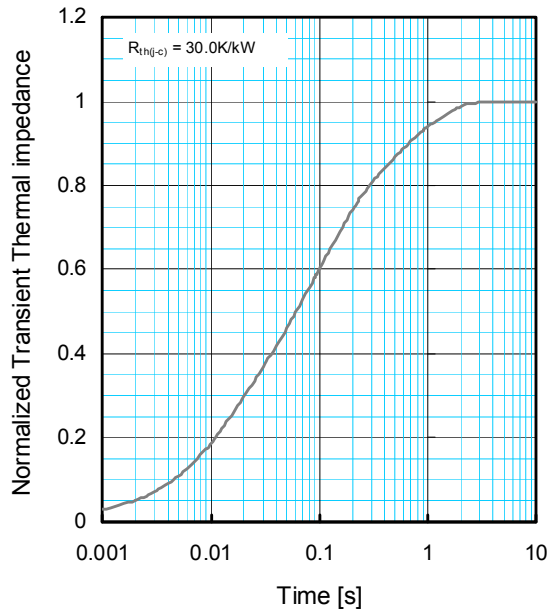


REVERSE RECOVERY SAFE OPERATING AREA (RRSOA)



PERFORMANCE CURVES

TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS



$$Z_{th(j-c)}(t) = \sum_{i=1}^n R_i \left\{ 1 - \exp\left(-\frac{t}{\tau_i}\right) \right\}$$

	1	2	3	4
R_i [K/kW]	0.0055	0.2360	0.4680	0.2905
τ_i [sec]	0.0001	0.0131	0.0878	0.6247

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