SHINDENGEN

## Schottky Rectifiers (SBD)

Dual

DE5SC4M

40V 5A

FEATURES

SMT

Tj150

P$_{RRSM}$ avalanche guaranteed

High current capacity with Small Package

APPLICATION

Switching power supply

DC/DC converter
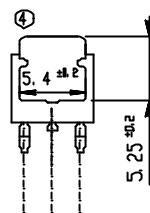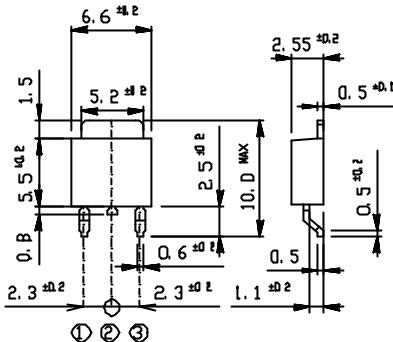
Home Appliances, Office Equipment

Telecommunication

OUTLINE DIMENSIONS

Case : E-pack

Unit : mm

RATINGS
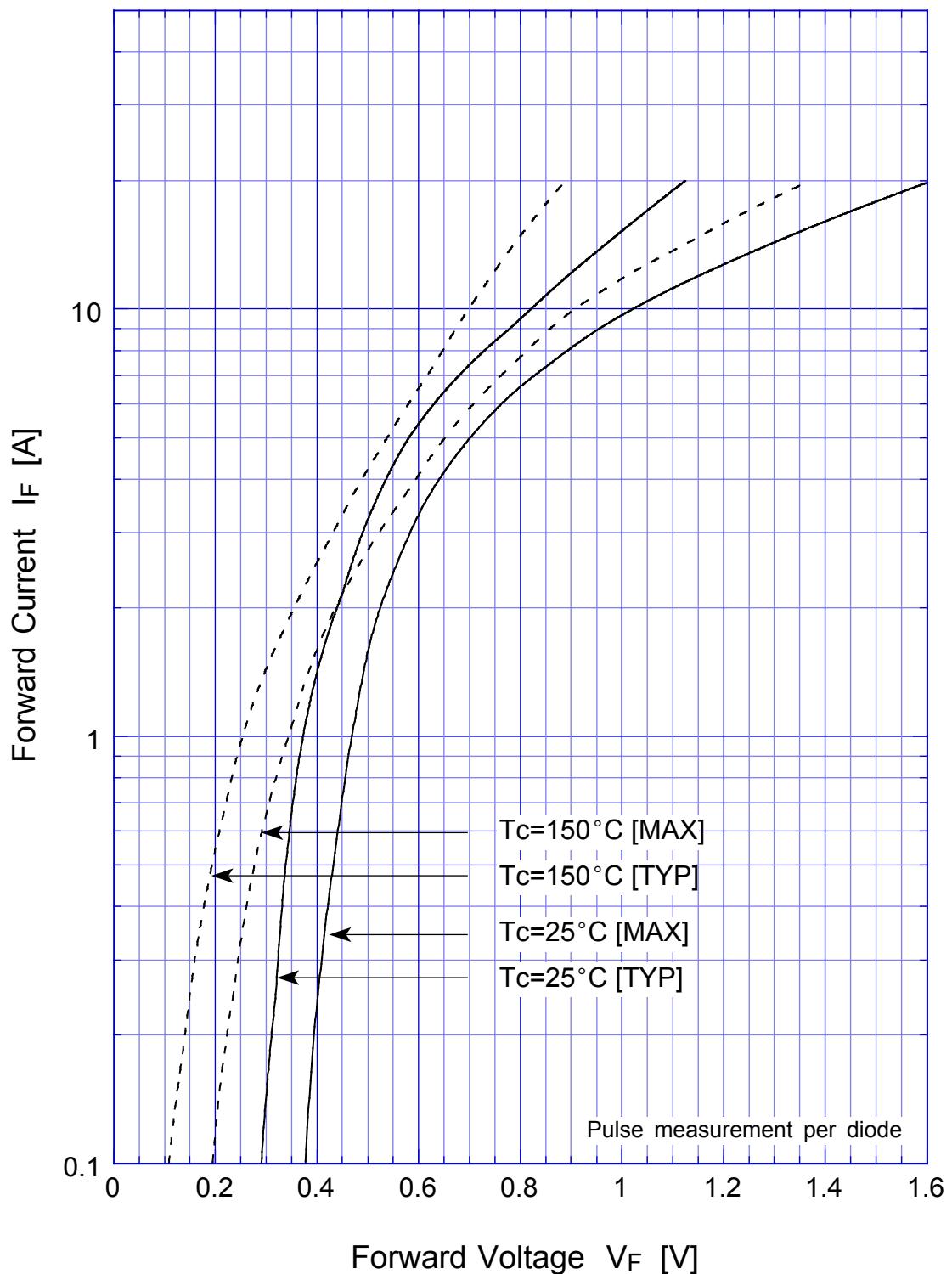
Absolute Maximum Ratings (If not specified Tc=25)

| Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		-40 150	
Operating Junction Temperature	Tj		150	
Maximum Reverse Voltage	V$_{RM}$		40	V
Repetitive Peak Surge Reverse Voltage	V$_{RRSM}$	Pulse width 0.5ms, duty 1/40	45	V
Average Rectified Forward Current	I$_O$	50Hz sine wave, R-load, Rating for each diode Io/2, Ta=25 , On alumina substrate	3	A
		50Hz sine wave, R-load, Rating for each diode Io/2, Tc=101	5	
Peak Surge Forward Current	I$_{FSM}$	50Hz sine wave, Non-repetitive 1 cycle peak value, Tj=125	80	A
Repetitive Peak Surge Reverse Power	P$_{RRSM}$	Pulse width 10μs, Rating of per diode, Tj=25	330	W
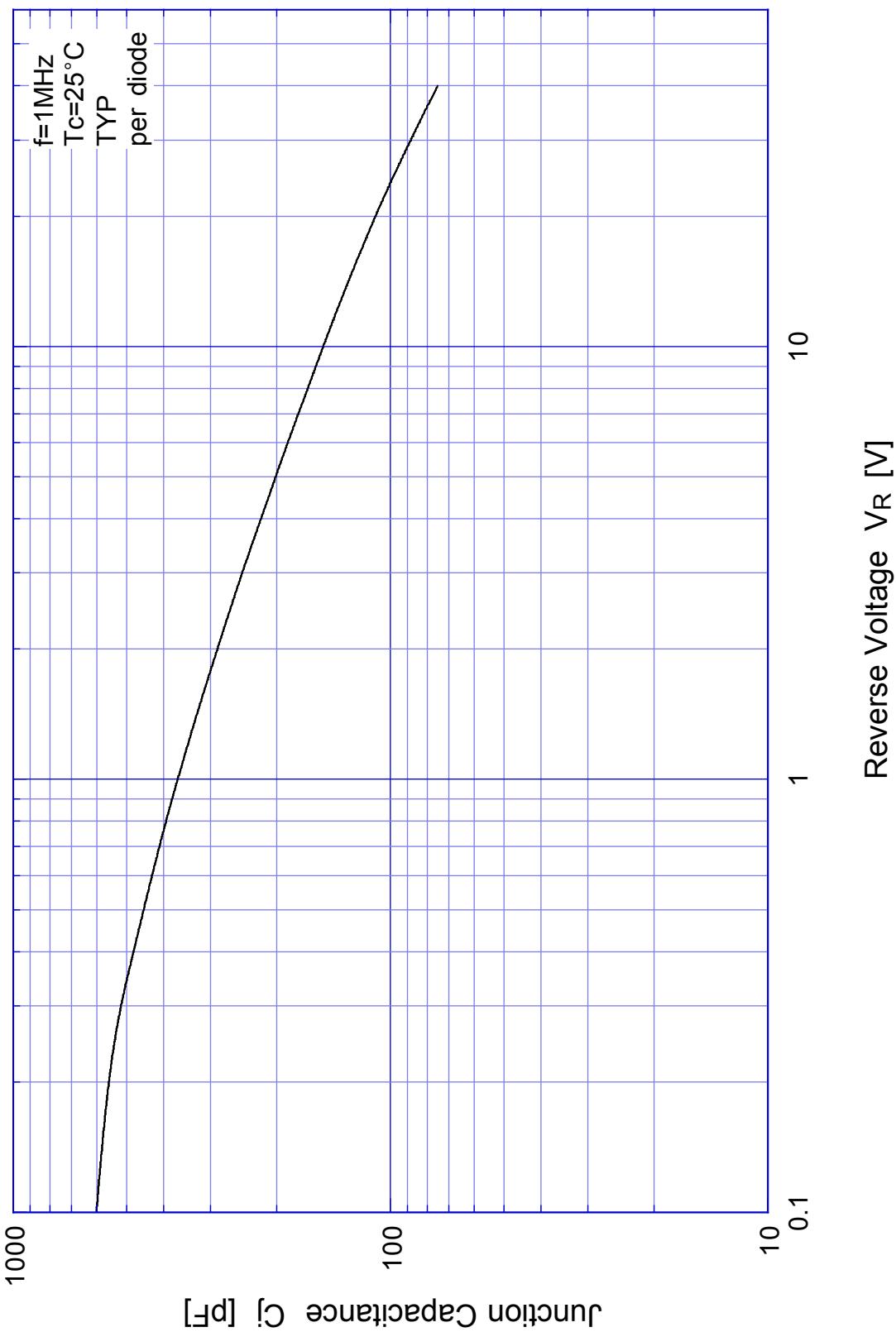
Electrical Characteristics (If not specified Tc=25)

Item	Symbol	Conditions	Ratings	Unit
Forward Voltage	V$_F$	I$_F$=2.5A, Pulse measurement, Rating of per diode	Max.0.55	V
Reverse Current	I$_R$	V$_R$=V$_{RM}$ Pulse measurement, Rating of per diode	Max.3.5	mA
Junction Capacitance	C$_j$	f=1MHz, V$_R$=10V, Rating of per diode	Typ.150	pF
Thermal Resistance	jc	junction to case	Max.12	/W
	ja	junction to ambient, On alumina substrate	Max.55	
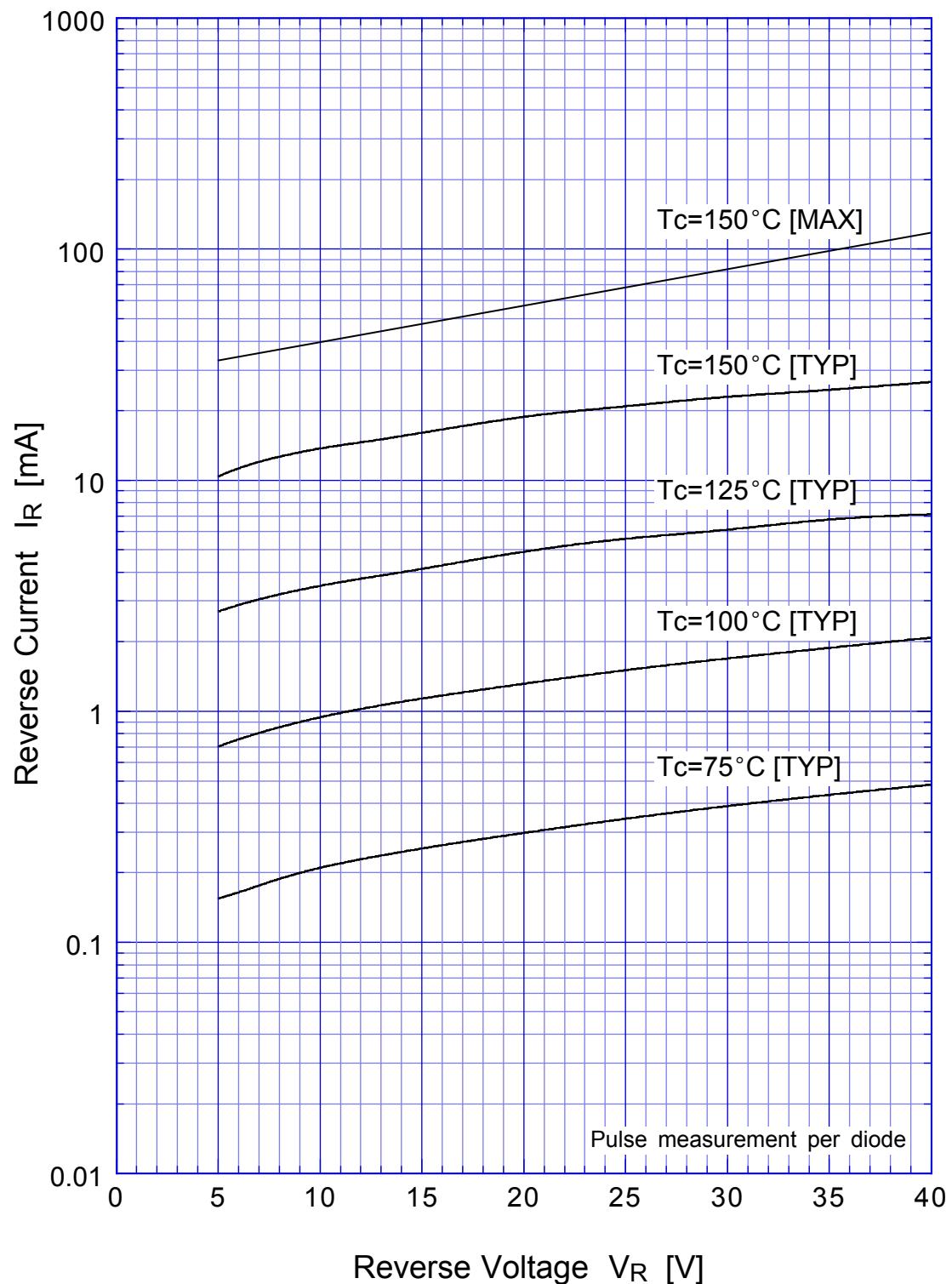
DE5SC4M   Forward Voltage

Forward Current I_F [A]

Forward Voltage V_F [V]

Tc=150°C [MAX]
Tc=150°C [TYP]
Tc=25°C [MAX]
Tc=25°C [TYP]

Pulse measurement per diode
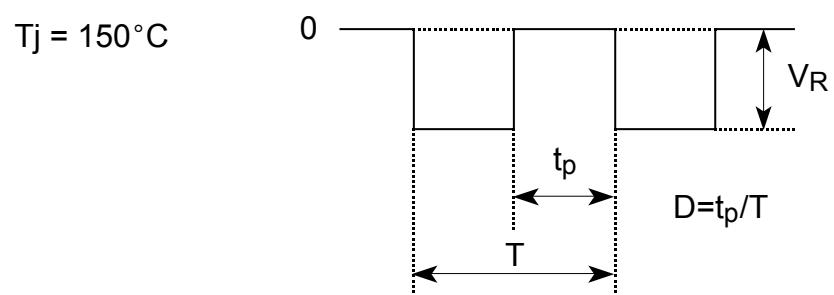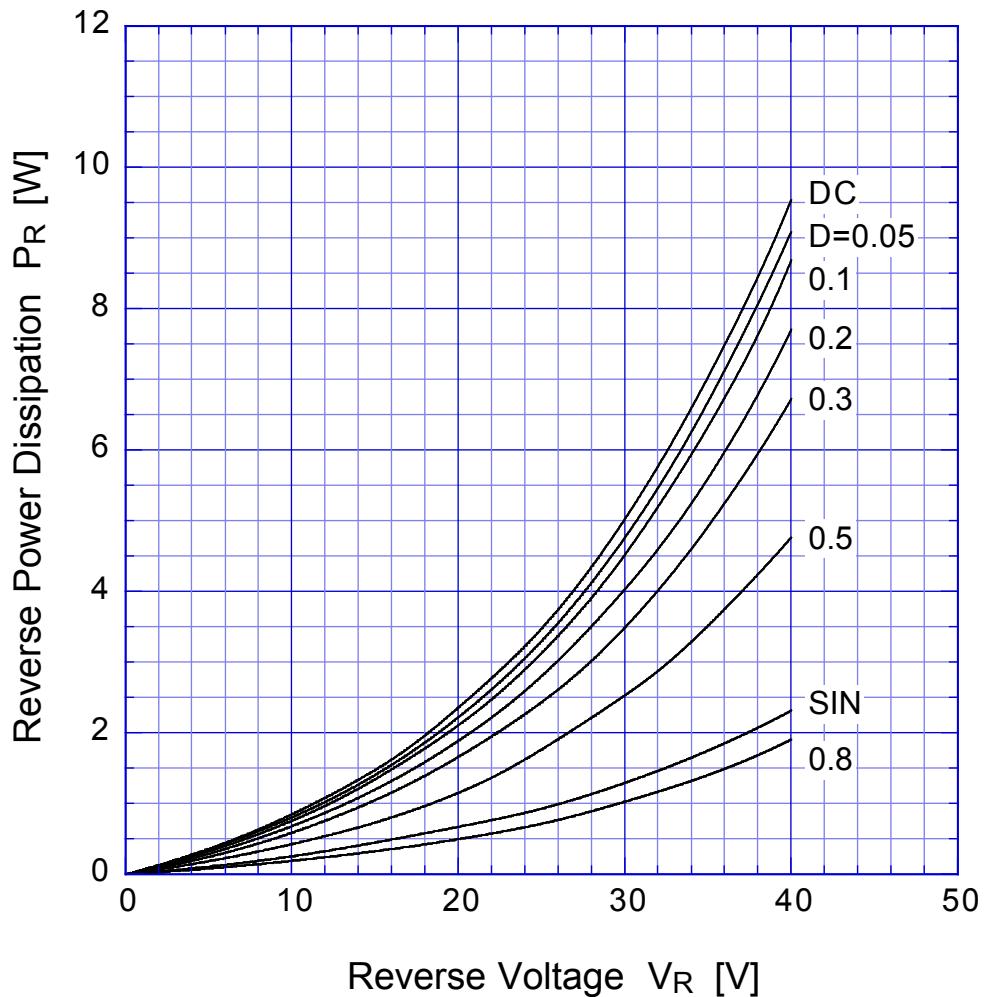
DE5SC4M   Junction Capacitance

f=1MHz
Tc=25°C
TYP
per diode

Reverse Voltage V$_R$ [V]

Junction Capacitance Cj [pF]
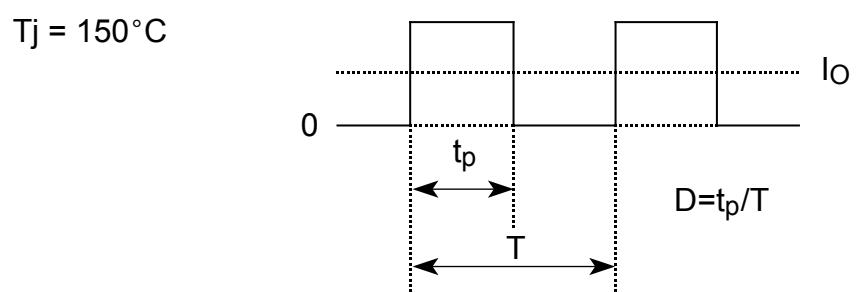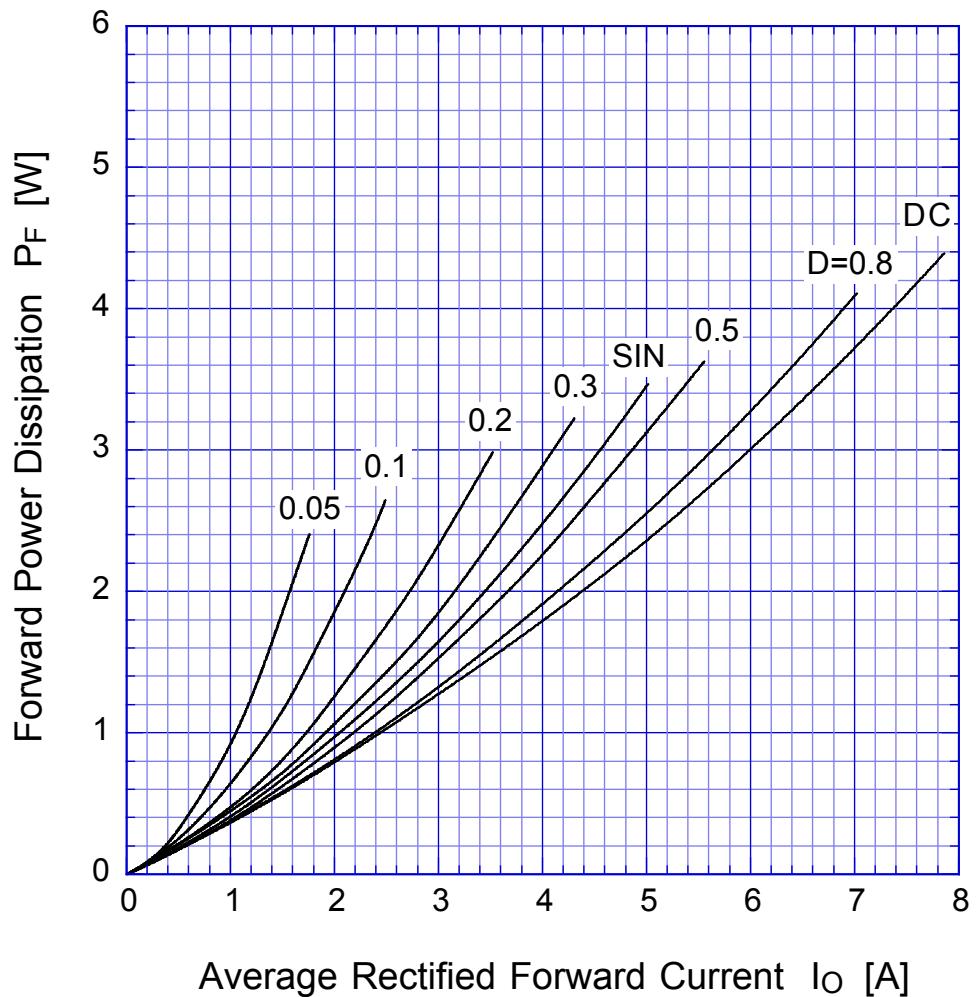
DE5SC4M   Reverse Current

Tc=150°C [MAX]

Tc=150°C [TYP]

Tc=125°C [TYP]

Tc=100°C [TYP]

Tc=75°C [TYP]

Reverse Current I$_R$ [mA]

Pulse measurement per diode

Reverse Voltage V$_R$ [V]
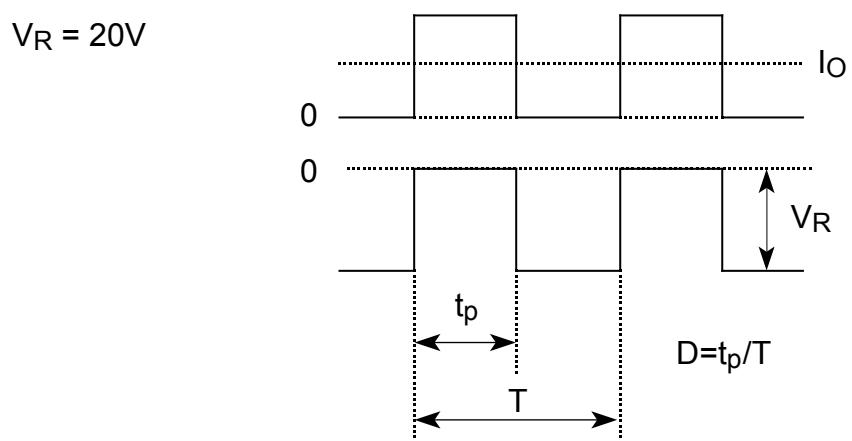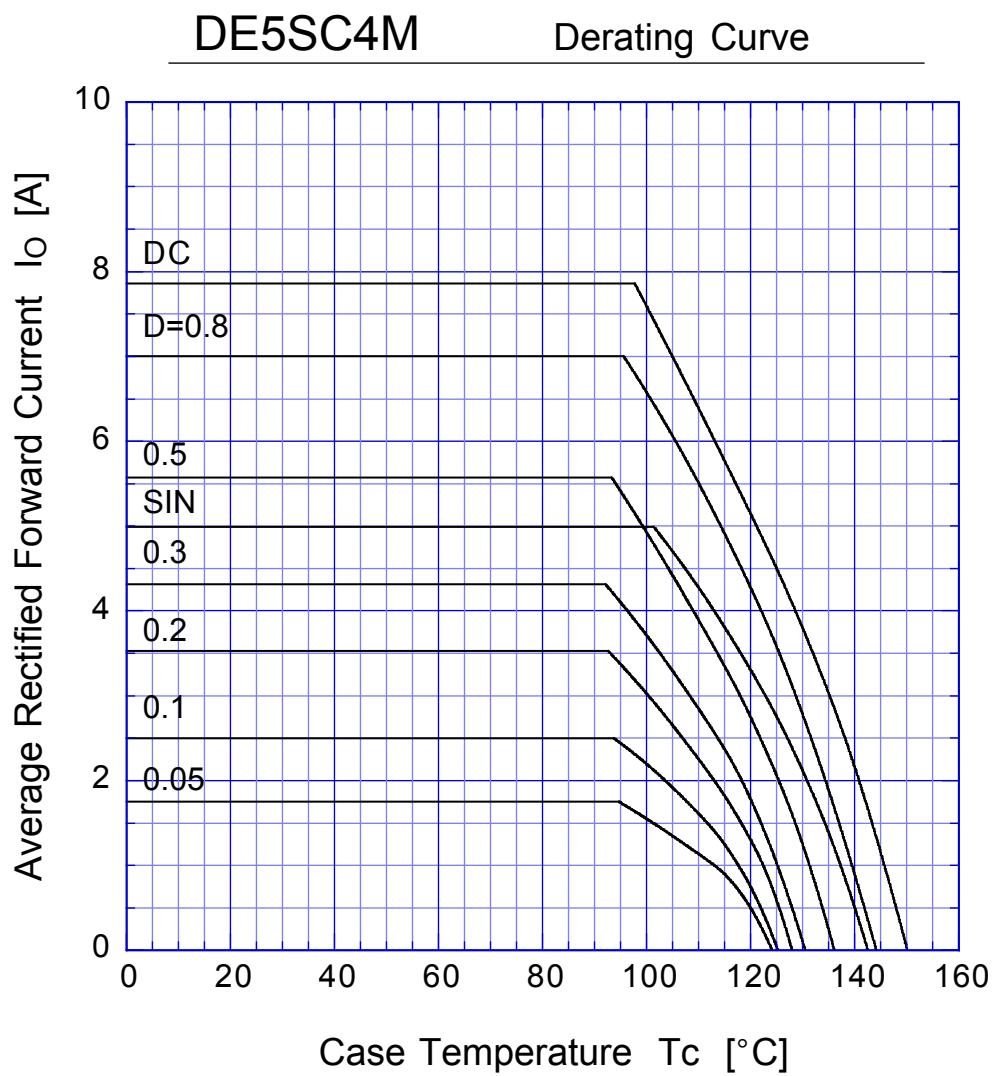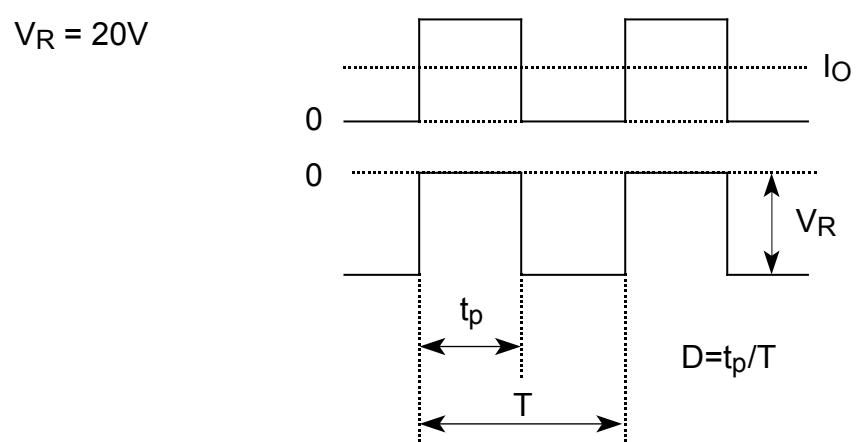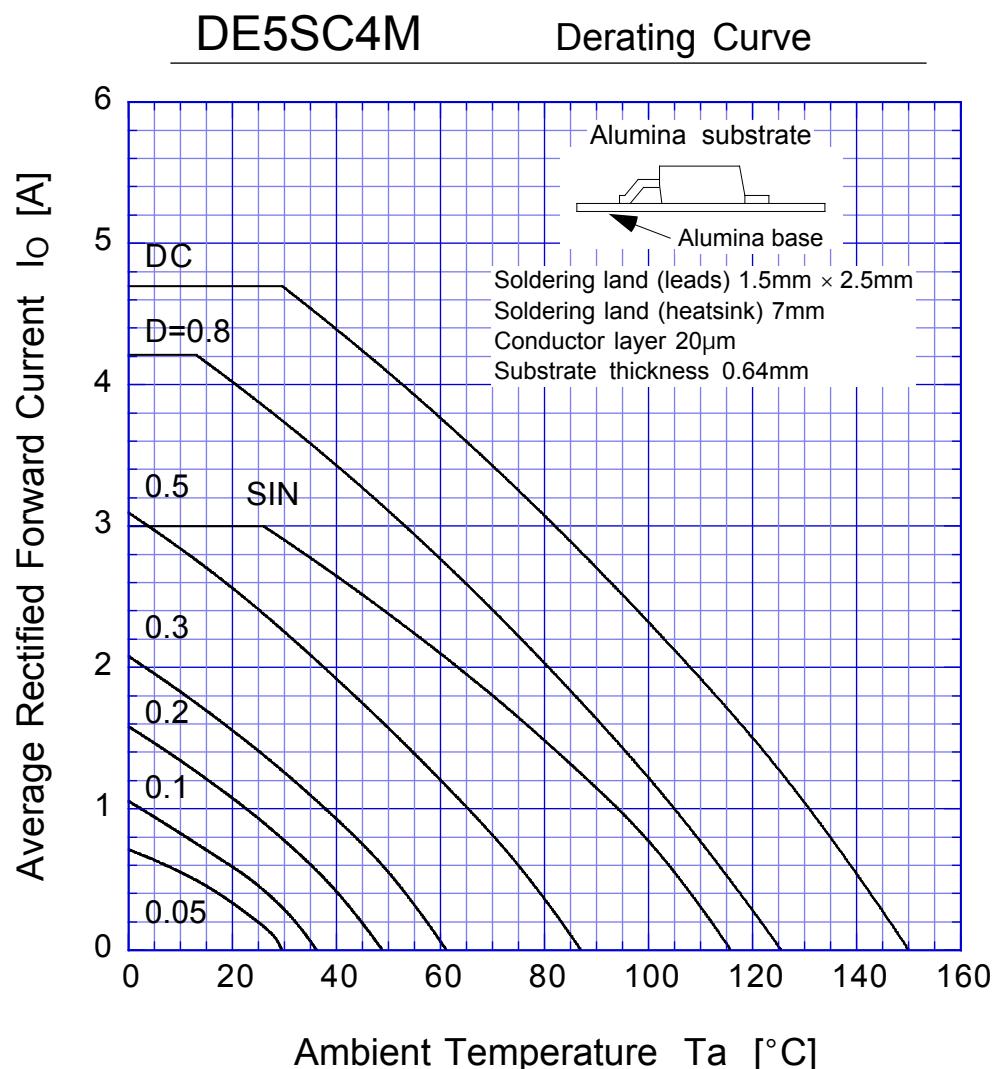
DE5SC4M   Reverse Power Dissipation

Reverse Power Dissipation P_R [W] vs Reverse Voltage V_R [V]

Curves labeled: DC, D=0.05, 0.1, 0.2, 0.3, 0.5, SIN, 0.8

Tj = 150°C

$D = t_p/T$
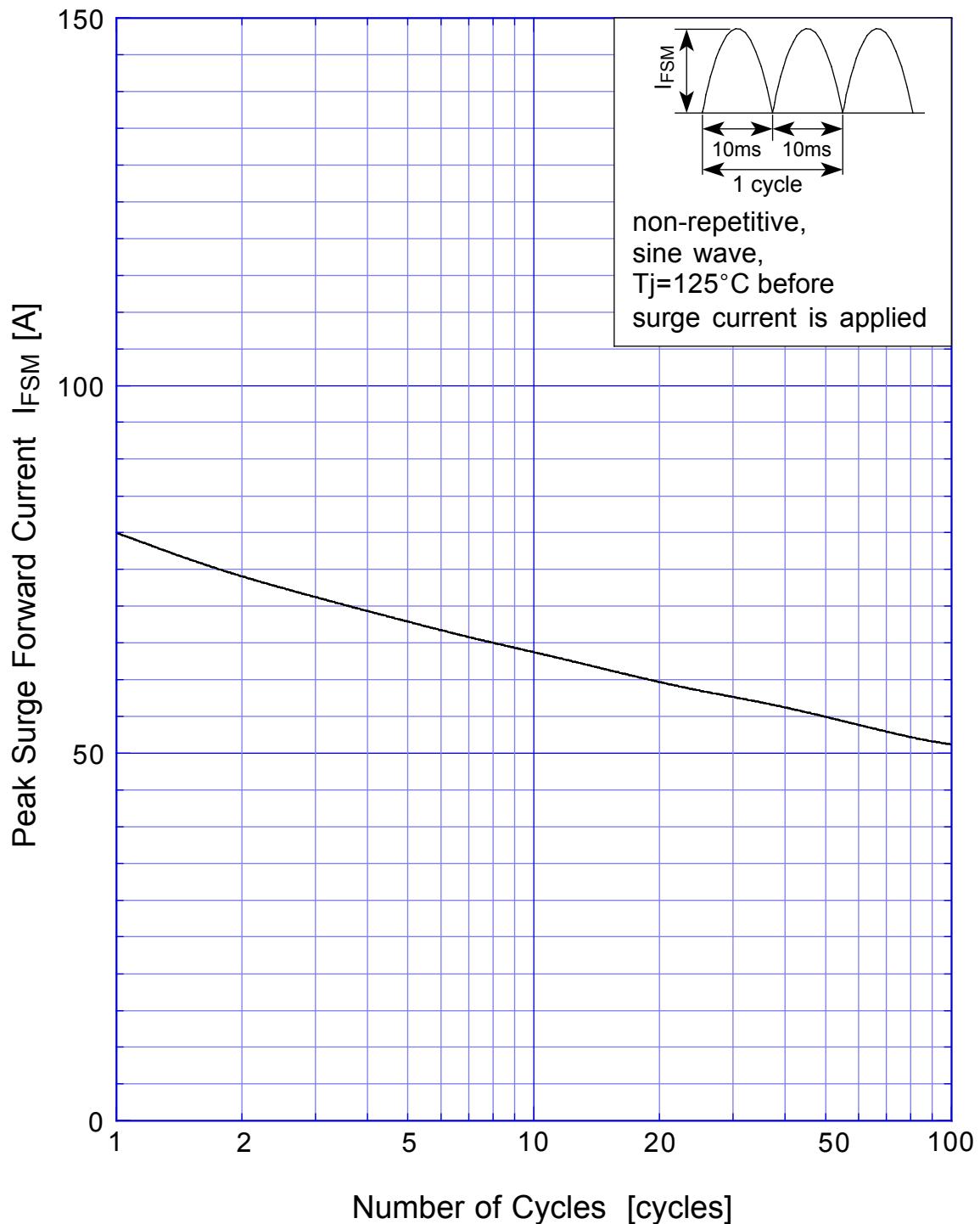
DE5SC4M   Forward Power Dissipation

Forward Power Dissipation P_F [W] vs. Average Rectified Forward Current I_O [A]

Curves labeled: 0.05, 0.1, 0.2, 0.3, SIN, 0.5, D=0.8, DC

Tj = 150°C

$D=t_p/T$

DE5SC4M   Derating Curve

Average Rectified Forward Current I_O [A] vs Case Temperature Tc [°C]

Curves labeled: DC, D=0.8, 0.5, SIN, 0.3, 0.2, 0.1, 0.05

$V_R = 20V$

$D = t_p/T$

DE5SC4M   Derating Curve

Graph: Average Rectified Forward Current I_O [A] (vertical axis, 0 to 6) versus Ambient Temperature Ta [°C] (horizontal axis, 0 to 160).

Curves labeled: DC, D=0.8, 0.5, SIN, 0.3, 0.2, 0.1, 0.05

Inset diagram: Alumina substrate / Alumina base
- Soldering land (leads) 1.5mm × 2.5mm
- Soldering land (heatsink) 7mm
- Conductor layer 20μm
- Substrate thickness 0.64mm

$V_R = 20V$

Waveform diagram showing I_O, V_R, t_p, T, and $D = t_p / T$

DE5SC4M   Peak Surge Forward Capability

Peak Surge Forward Current I_{FSM} [A]

Number of Cycles [cycles]

I_{FSM}

10ms   10ms

1 cycle

non-repetitive,
sine wave,
Tj=125°C before
surge current is applied

SBD   Repetitive Surge Reverse Power Derating Curve

Junction Temperature   Tj   [°C]

$$P_{RRSM} = I_{RP} \times V_{RP}$$

SBD   Repetitive Surge Reverse Power Capability

Pulse Width t_p [μs]

$P_{RRSM} = I_{RP} \times V_{RP}$