

V_R	1700V
I_F	10A ^{*1}
Q_C	51nC

●Features

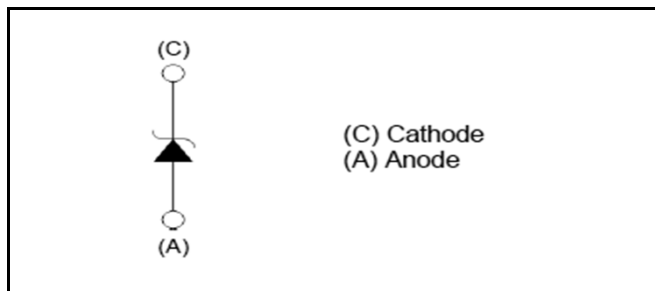
- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible

●Construction

Silicon carbide epitaxial planar type

Schottky diode

●Inner Circuit



●Absolute Maximum Ratings ($T_j = 25^\circ\text{C}$)

Parameter		Symbol	Value	Unit
Reverse voltage (repetitive peak)		V_{RM}	1700	V
Reverse voltage (DC)		V_R	1700	V
Continuous forward current		I_F	10 ^{*1}	A
Surge non-repetitive forward current	PW=10ms sinusoidal, $T_j=25^\circ\text{C}$	I_{FSM} ^{*2}	41	A
	PW=10ms sinusoidal, $T_j=150^\circ\text{C}$		30	A
	PW=10μs square, $T_j=25^\circ\text{C}$		160	A
i^2t value	$1 \leq PW \leq 10\text{ms}$, $T_j=25^\circ\text{C}$	$\int i^2 dt$ ^{*2}	8.4	A ² s
	$1 \leq PW \leq 10\text{ms}$, $T_j=150^\circ\text{C}$		4.5	A ² s
Junction temperature		T_j	175	°C
Range of storage temperature		T_{stg}	-55 to +175	°C

*1 Limited by T_j *2 Assumes $Z_{th(j-a)}$ of 0.57 °C/W or less. (Pulse Width = 8.3ms)

●Electrical characteristics ($T_j = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V_{DC}	$I_R=0.06\text{mA}$	1700	-	-	V
Forward voltage	V_F	$I_F=10\text{A}, T_j=25^\circ\text{C}$	-	1.65	1.95	V
		$I_F=10\text{A}, T_j=150^\circ\text{C}$	-	2.5	-	V
		$I_F=10\text{A}, T_j=175^\circ\text{C}$	-	2.8	-	V
Reverse current	I_R	$V_R=1700\text{V}, T_j=25^\circ\text{C}$	-	1	60	μA
		$V_R=1700\text{V}, T_j=150^\circ\text{C}$	-	22	-	μA
		$V_R=1700\text{V}, T_j=175^\circ\text{C}$	-	50	-	μA
Total capacitance	C	$V_R=1\text{V}, f=1\text{MHz}$	-	620	-	pF
		$V_R=1700\text{V}, f=1\text{MHz}$	-	34	-	pF
Total capacitive charge	Q_C	$V_R=800\text{V}, di/dt=500\text{A}/\mu\text{s}$	-	51	-	nC
Switching time	t_C	$V_R=800\text{V}, di/dt=500\text{A}/\mu\text{s}$	-	20	-	ns

●Electrical characteristic curves

Fig.1 $V_F - I_F$ Characteristics

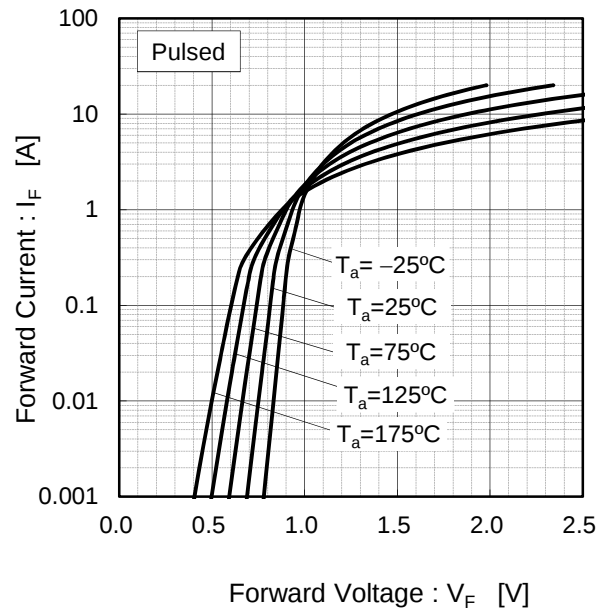


Fig.2 $V_F - I_F$ Characteristics

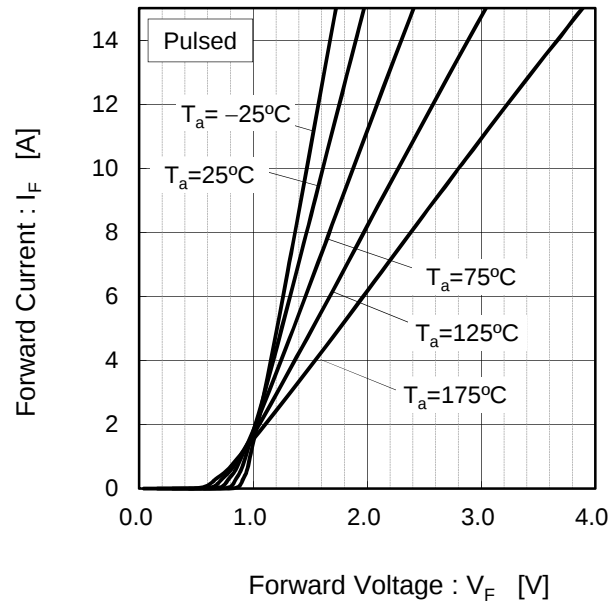


Fig.3 $V_R - I_R$ Characteristics

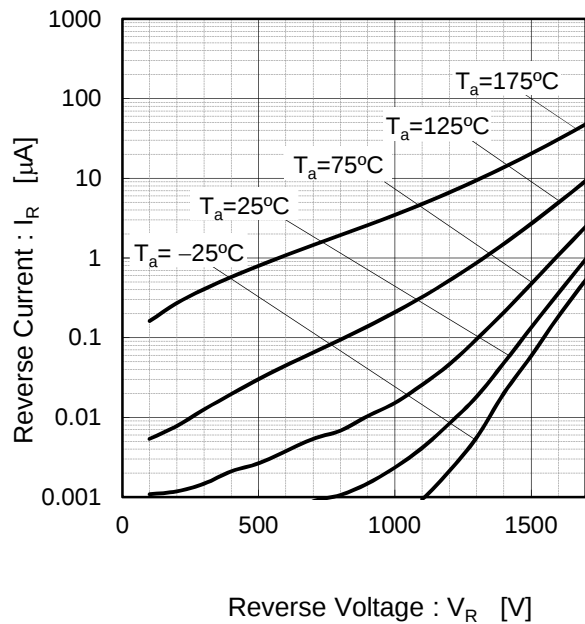
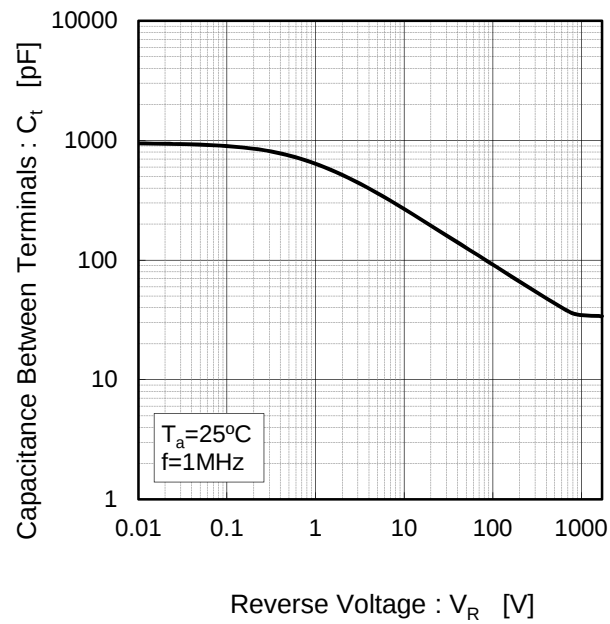
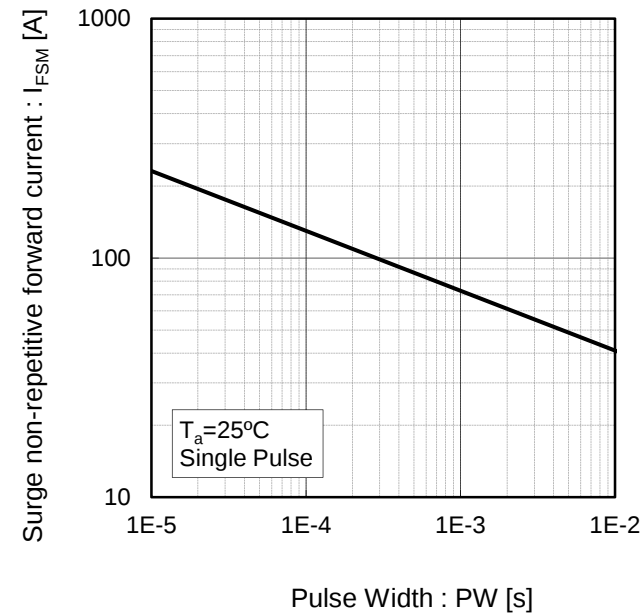


Fig.4 $V_R - C_t$ Characteristics



●Electrical characteristic curves

Fig.5 Surge non-repetitive forward current vs. Pulse width (Sinusoidal waveform)*



* Assumes Z_{th(j-a)} of 0.38 °C/W or less.
(Pulse Width = 8.3ms)

Fig.6 Typical capacitance store energy

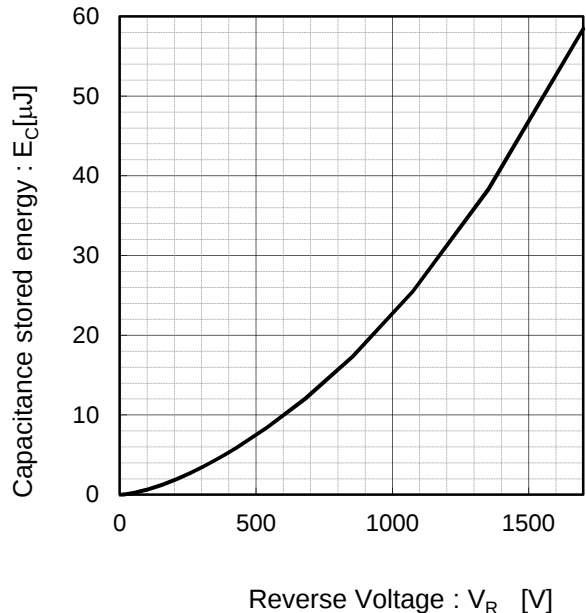
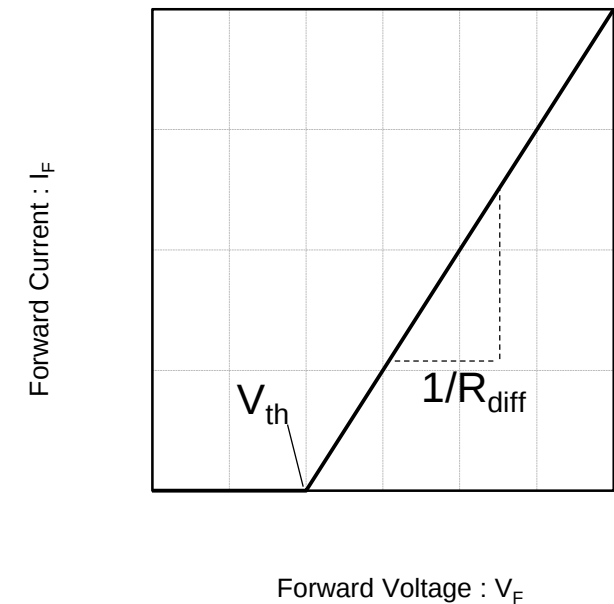


Fig.7 Equivalent forward current curve



$$V_F = V_{th} + R_{diff} I_F$$

$$V_{th}(T_j) = a_0 + a_1 T_j$$
$$R_{diff}(T_j) = b_0 + b_1 T_j + b_2 T_j^2$$

Symbol	Typical Value	Unit
a ₀	9.21E-01	V
a ₁	− 1.52E-03	V/°C
b ₀	6.02E-02	Ω
b ₁	4.06E-04	Ω/°C
b ₂	2.82E-06	Ω/°C ²

T_j in °C; -55 °C < T_j < °C ; I_F < 20A

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