

V_R	650V
I_F	12A
Q_C	18nC

●Features

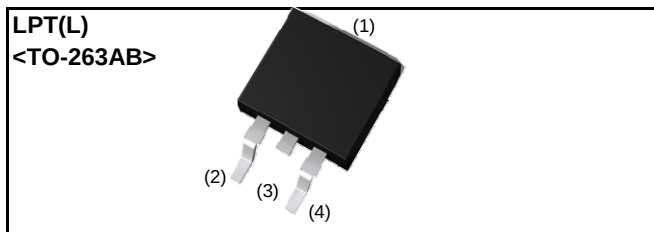
- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible

●Construction

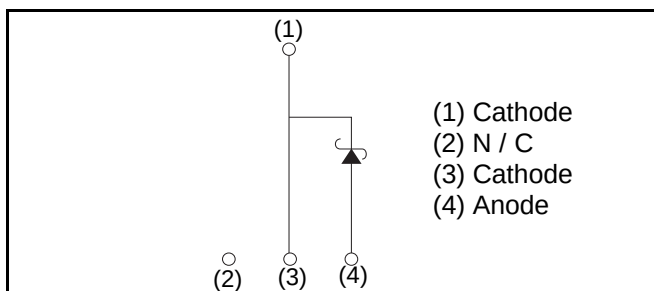
Silicon carbide epitaxial planer type

●AEC-Q101 Qualified

●Outline



●Inner circuit



●Packaging specifications

Type	Packaging	Embossed tape
	Reel size (mm)	330
	Tape width (mm)	24
	Basic ordering unit (pcs)	1,000
	Packing code	TLL
	Marking	SCS212AJ

●Absolute maximum ratings ($T_j = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Reverse voltage (repetitive peak)	V_{RM}	650	V
Reverse voltage (DC)	V_R	650	V
Continuous forward current	I_F	12* ¹	A
Surge no repetitive forward current	I_{FSM}	45* ²	A
		170* ³	A
		36* ⁴	A
Repetitive peak forward current	I_{FRM}	47* ⁵	A
Total power dissipation	P_D	88* ⁶	W
Junction temperature	T_j	175	$^\circ\text{C}$
Range of storage temperature	T_{stg}	-55 to +175	$^\circ\text{C}$

*1 $T_c=130^\circ\text{C}$ *2 $PW=8.3\text{ms}$ sinusoidal, $T_j=25^\circ\text{C}$ *3 $PW=10\mu\text{s}$ square, $T_j=25^\circ\text{C}$

*4 $PW=8.3\text{ms}$ sinusoidal, $T_j=150^\circ\text{C}$ *5 $T_c=100^\circ\text{C}$, $T_j=150^\circ\text{C}$, Duty cycle=10% *6 $T_c=25^\circ\text{C}$

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

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V_{DC}	$I_R = 0.24\text{mA}$	600	-	-	V
Forward voltage	V_F	$I_F = 12\text{A}, T_j = 25^\circ\text{C}$	-	1.35	1.55	V
		$I_F = 12\text{A}, T_j = 150^\circ\text{C}$	-	1.55	-	V
		$I_F = 12\text{A}, T_j = 175^\circ\text{C}$	-	1.63	-	V
Reverse current	I_R	$V_R = 600\text{V}, T_j = 25^\circ\text{C}$	-	2.4	240	μA
		$V_R = 600\text{V}, T_j = 150^\circ\text{C}$	-	36	-	μA
		$V_R = 600\text{V}, T_j = 175^\circ\text{C}$	-	84	-	μA
Total capacitance	C_t	$V_R = 1\text{V}, f = 1\text{MHz}$	-	438	-	pF
		$V_R = 600\text{V}, f = 1\text{MHz}$	-	44	-	pF
Total capacitive charge	Q_c	$V_R = 400\text{V}, di/dt = 350\text{A}/\mu\text{s}$	-	18	-	nC
Switching time	t_c	$V_R = 400\text{V}, di/dt = 350\text{A}/\mu\text{s}$	-	16	-	ns

●Thermal characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	-	-	1.4	1.7	$^\circ\text{C}/\text{W}$

●Electrical characteristic curves

Fig.1 $V_F - I_F$ Characteristics

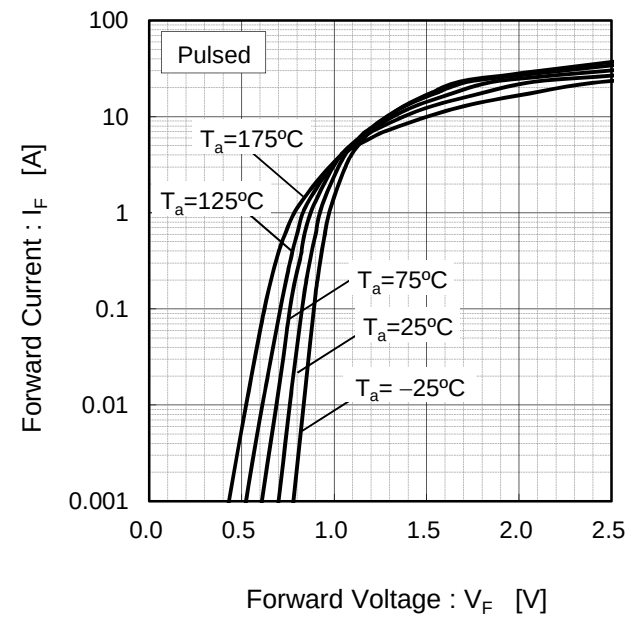


Fig.2 $V_F - I_F$ Characteristics

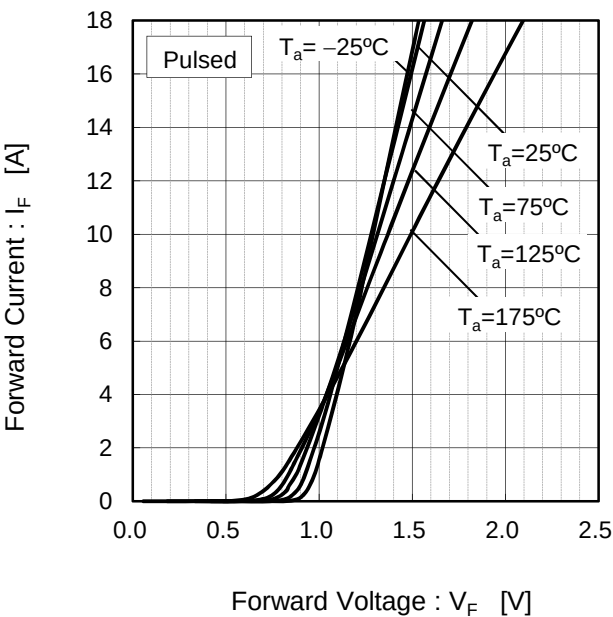


Fig.3 $V_R - I_R$ Characteristics

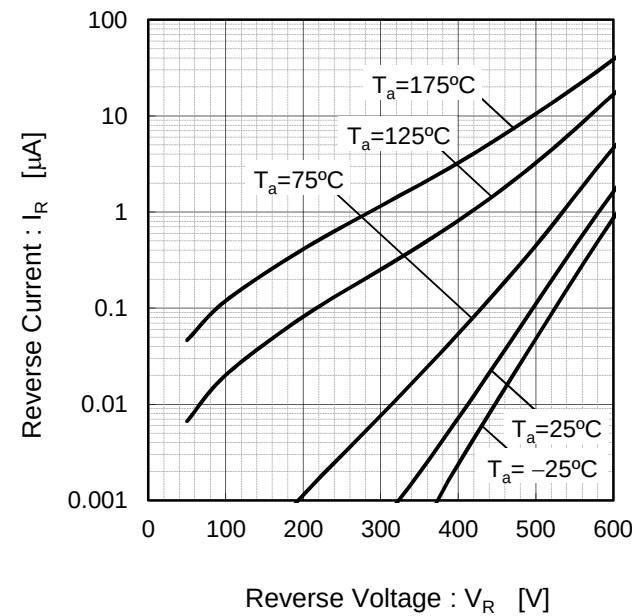
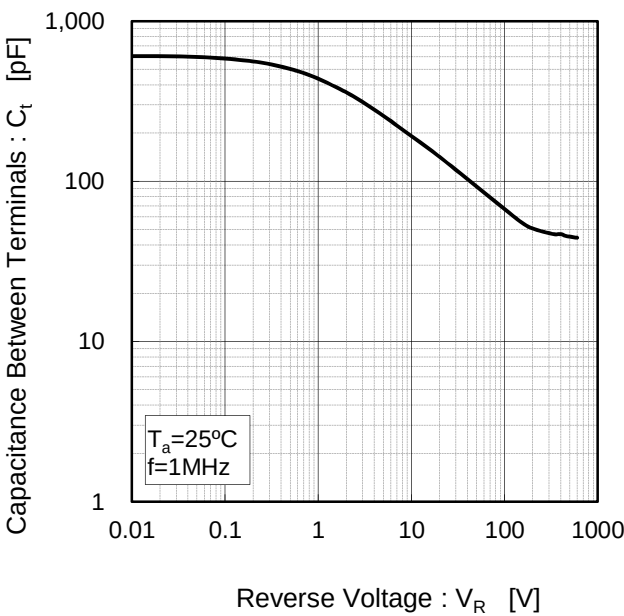


Fig.4 $V_R - C_t$ Characteristics



●Electrical characteristic curves

Fig.5 Thermal Resistance vs. Pulse Width

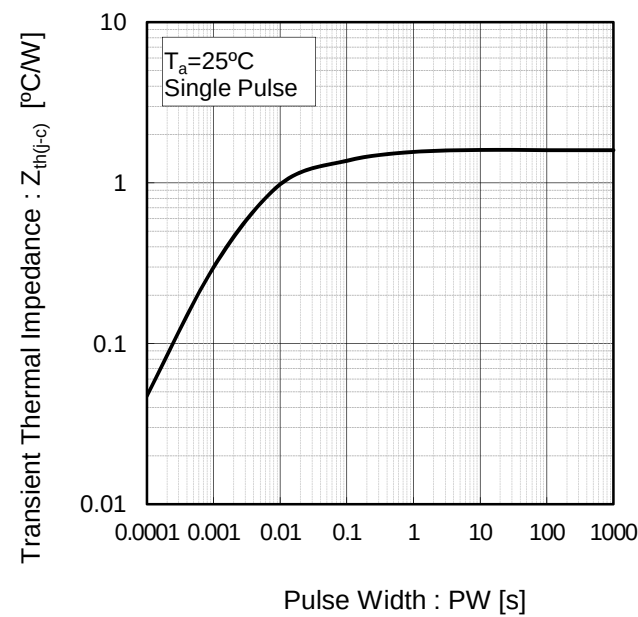


Fig.6 Power Dissipation

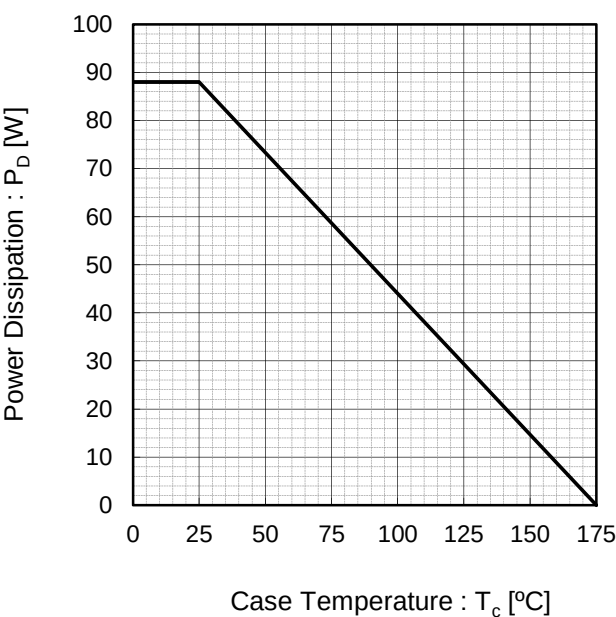


Fig.7 I_P - T_c Derating Curve

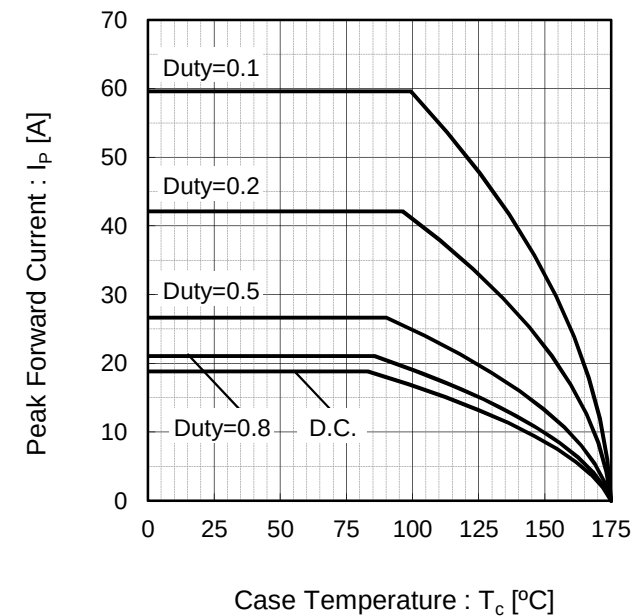
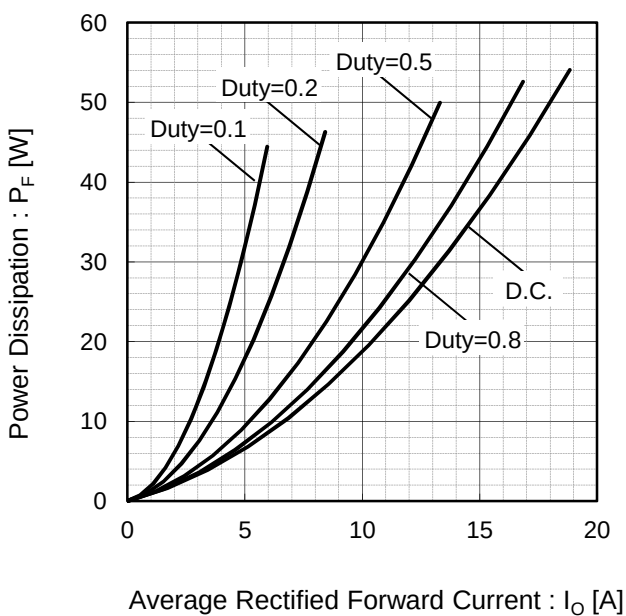


Fig.8 I_O - P_F Characteristics



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