PESC10120Y-R

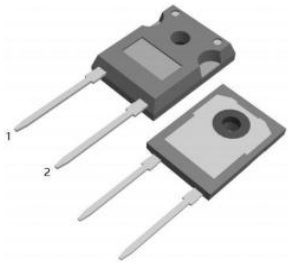
Silicon Carbide 1200V Schottky Diode

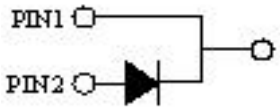
重庆平伟半导体股份有限公司

Features

- Revolutionary semiconductor material - Silicon Carbide
- Benchmark switching behavior
- No reverse recovery/ No forward recovery
- Temperature independent switching behavior
- Optimized for high temperature operation
- Qualified according to JEDEC criteria

TO-247-2L





Applications

- Switch mode power supply
- Power factor correction
- Solar inverter
- Uninterruptible power supply

Description

- System efficiency improvement over Si diodes
- Enabling higher frequency / increased power density solutions
- System size/cost savings due to reduced heatsink requirements and smaller magnetics
- Reduced EMI
- Highest efficiency across the entire load range
- Robust diode operation during surge events
- High reliability

Key performance parameters

Product Summary

V_{DC}	1200V
I_F	10A
T_j,max	175°C

Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
PESC10120Y-R	PESC10120Y	TO-247-2L	Tube	N/A	N/A	30pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	1200	V
Continuous forward current for T_C = 150°C	I_F	10	A
Non-Repetitive Peak Forward Surge Current T_C=25°C,t_p=8.3 ms, Half Sine Pulse T_C=150°C,t_p=8.3 ms, Half Sine Pulse	I_{FSM}	100 75	A
i^2t value T_C = 25°C, t_p=8.3 ms i^2t value T_C = 150°C, t_p=8.3 ms	$\int i^2dt$	42 23	A^2s
Total power disspation T_C = 25°C	P_D	114	W
Operating junction and storage temperature	T_j , T_{stg}	-55 to +175	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	Tsold	260	°C

Thermal Resistance

Parameter	Symbol	Condition	Value			Unit
			min.	typ.	max.	
Thermal resistance, junction – case.	R_{thJC}		-	0.9	1.3	°C/W
Thermal resistance, junction - ambient(min. footprint)	R_{thJA}		-		50	°C/W

Electrical Characteristic

Static Characteristic (T_j=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}	I_R=100uA	1200	-	-	V
Forward voltage	V_F	I_F=10A,T_j=25°C	-	1.5	1.8	V
		I_F=10A,T_j=150°C	-	2.0	2.4	V
Reverse current	I_R	V_R=1200V,T_j=25°C		1	10	μA
		V_R=1200V,T_j=150°C	-	10	100	

Dynamic Characteristic (T_j=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Total capacitance	C	V_R =0.1V,f=1MHz	-	653	-	pF
		V_R =400V,f=1MHz	-	44	-	
		V_R =800V,f=1MHz	-	35	-	
Total capacitive charge	Q_C	V_R =800V, $Q_c = \int_0^{V_R} C(V)\mathrm{d}V$	-	47	-	nC

Typical Performance Characteristics

Fig 1: Forward Characteristics

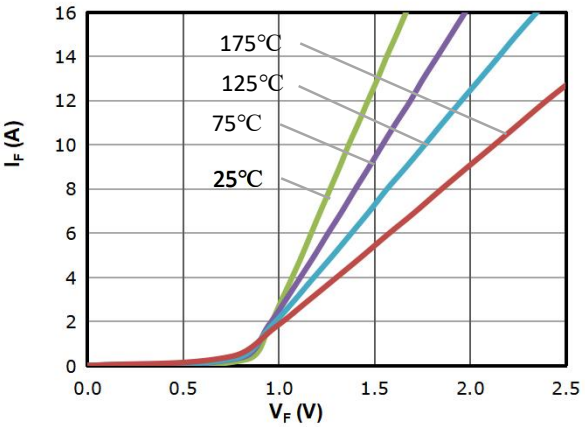


Fig 2: Reverse Characteristics

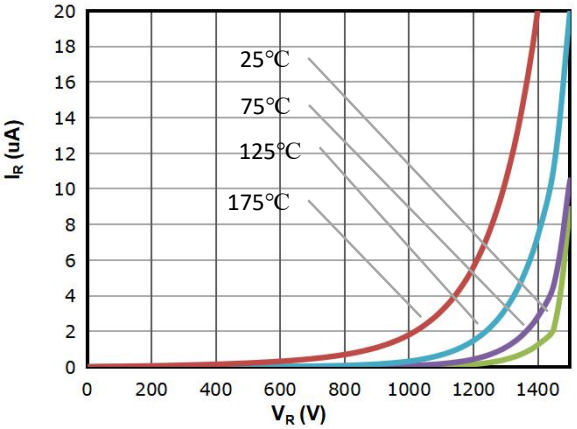


Fig 3: Total Capacitance Charge VS. Reverse Voltage

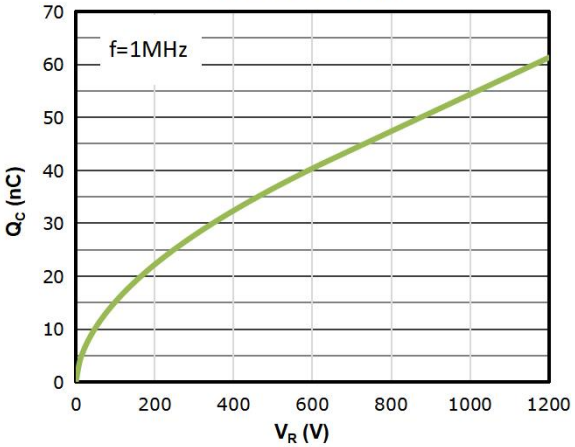


Fig 4: Capacitance Characteristics

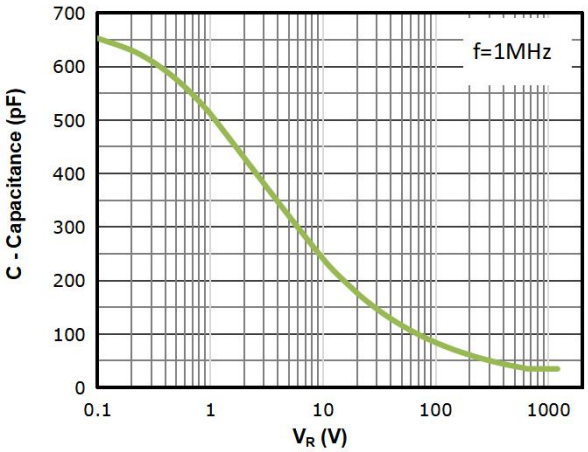


Fig 5: Power Dissipation

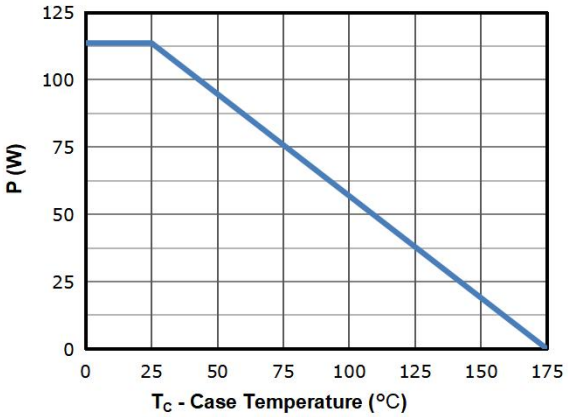
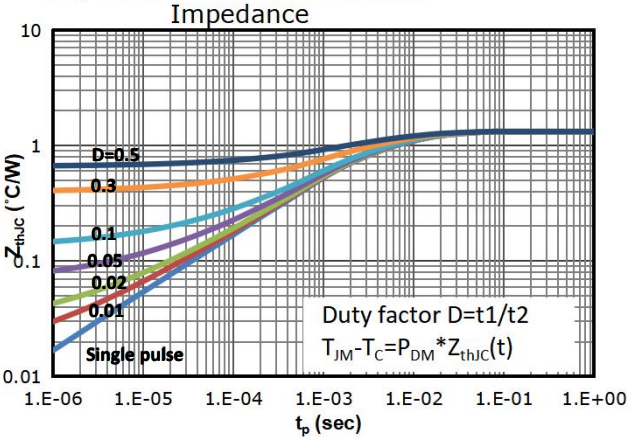
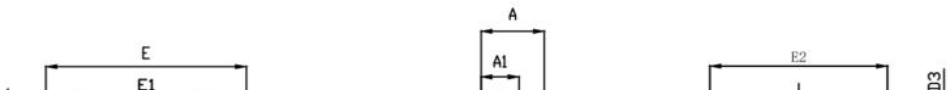
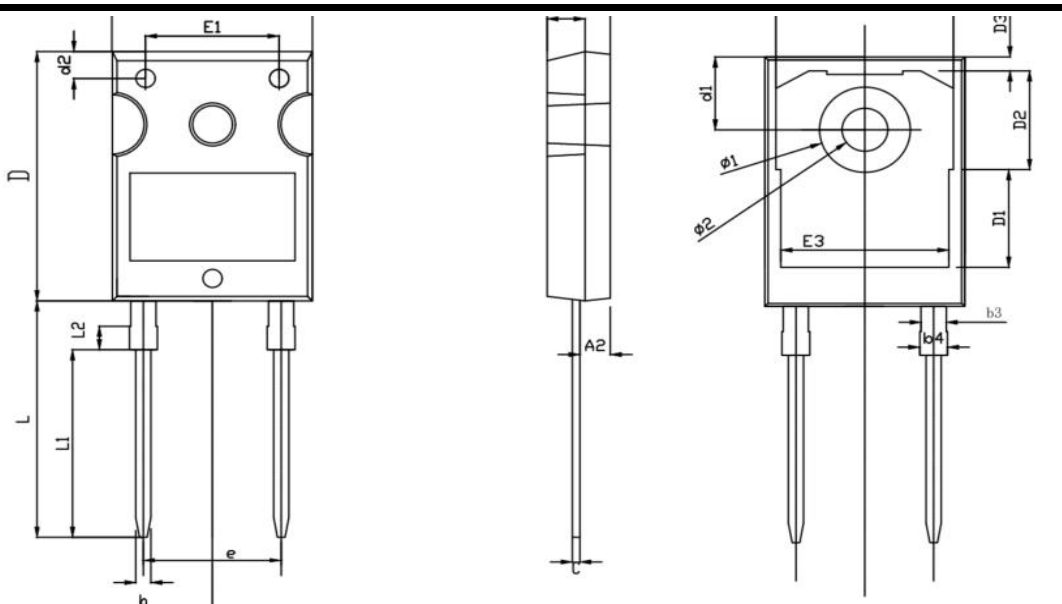


Fig 6: Max. Transient Thermal Impedance

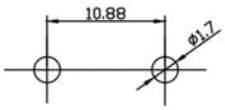


Package Outline: TO-247-2L





RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.80	3.00	3.20
A2	2.26	2.41	2.56
b	1.10	1.20	1.30
b3	1.90	2.00	2.10
b4	2.00	–	2.20
c	0.50	0.60	0.70
D	20.80	21.00	21.20
D1	8.03	8.23	8.43
D2	8.12	8.32	8.52
D3	0.97	1.17	1.37
d1	6.00	6.15	6.30
d2	2.20	2.30	2.40
E	15.60	15.80	16.00
E1	10.30	10.50	10.70
E2	13.82	14.02	14.22
E3	13.30	13.50	13.70
e	10.68	10.88	11.08
L	19.72	19.92	20.12
L1	15.59	15.79	15.99
L2	1.78	1.98	2.18
Ø1	7.10	7.19	7.30
Ø2	3.50	3.60	3.70

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