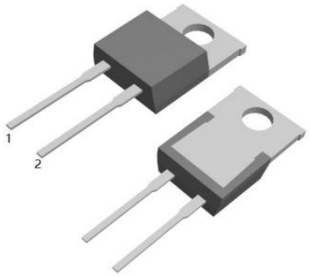
PESC0865-R

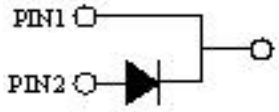
Silicon Carbide 650V Schottky Diode

重庆平伟半导体股份有限公司

Features

TO-220AD-2L





- 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

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}	650V
I_F	8A
T_j,max	175°C

Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
PESC0865-R	PESC0865	TO-220AD-2L	Tube	N/A	N/A	50pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	650	V
Continuous forward current for T_C = 150°C	I_F	8	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}	90 70	A
i²t value T_C = 25°C, t_p=8.3 ms i²t value T_C = 150°C, t_p=8.3 ms	$\int i^2dt$	34 20	A^2s
Total power disspation T_C = 25°C	P_D	65	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}		-	1.53	2.3	°C/W
Thermal resistance, junction - ambient(min. footprint)	R_{thJA}		-		40	°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	650	-	-	V
Forward voltage	V_F	I_F=8A,T_j=25°C	-	1.27	1.48	V
		I_F=8A,T_j=150°C	-	1.41	1.80	V
Reverse current	I_R	V_R=650V,T_j=25°C		0.5	20	μA
		V_R=650V,T_j=150°C	-	10	200	

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	-	489	-	pF
		V_R =200V,f=1MHz	-	44	-	
		V_R =400V,f=1MHz	-	32	-	
Total capacitive charge	Q_C	V_R =400V, $Q_c = \int_0^{V_R} C(V)\mathrm{d}V$	-	24	-	nC

Typical Performance Characteristics

Fig 1: Forward Characteristics

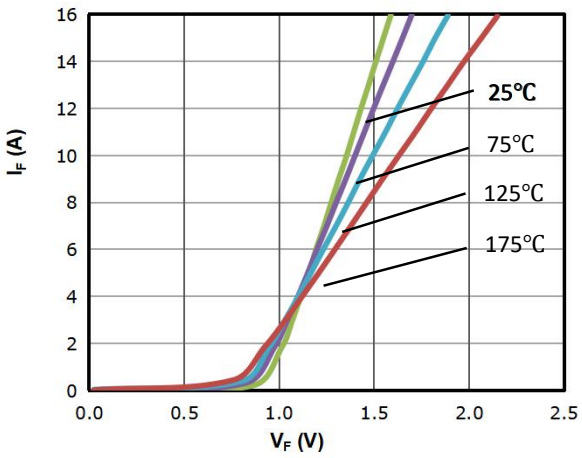


Fig 2: Reverse Characteristics

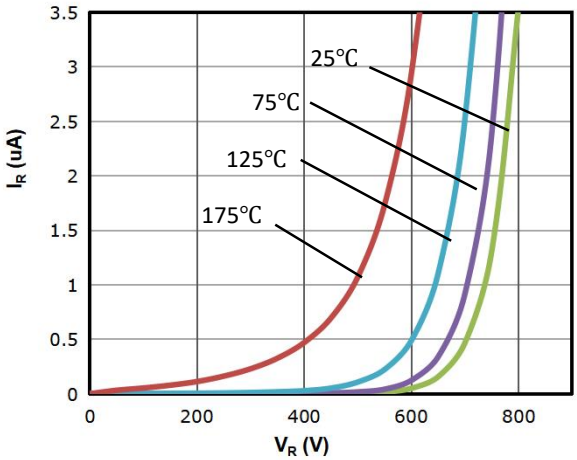


Fig 3: Total Capacitance Charge VS. Reverse Voltage

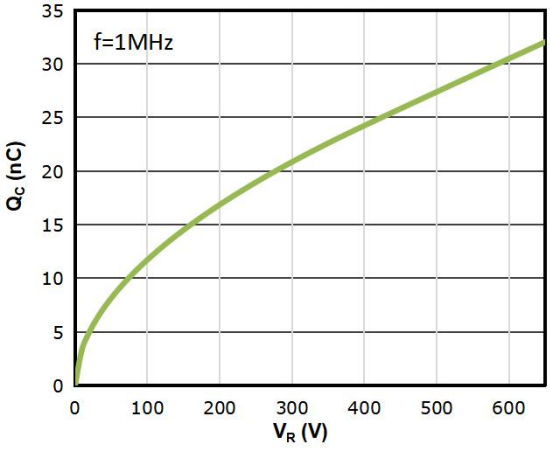


Fig 4: Capacitance Characteristics

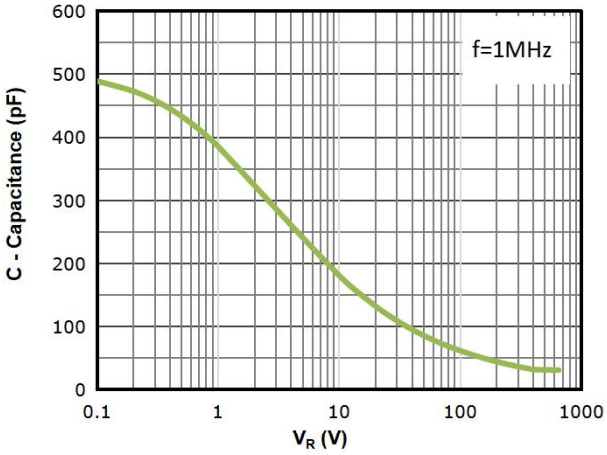


Fig 5: Power Dissipation

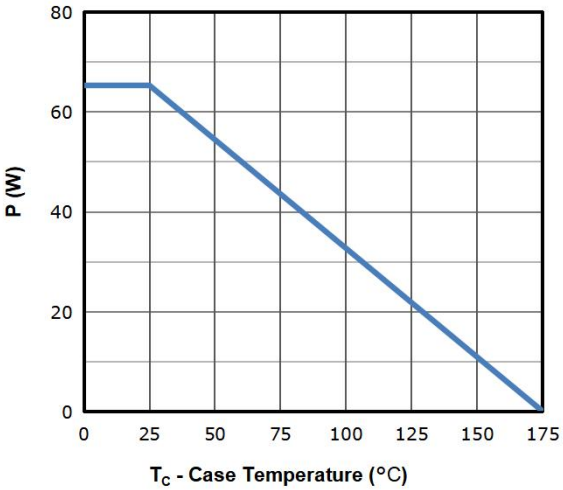
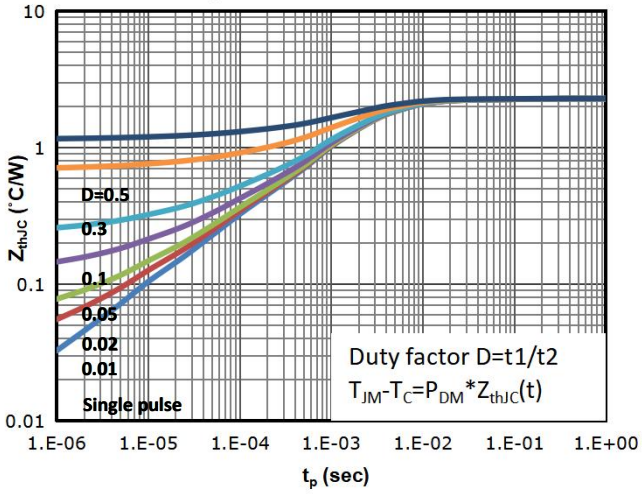
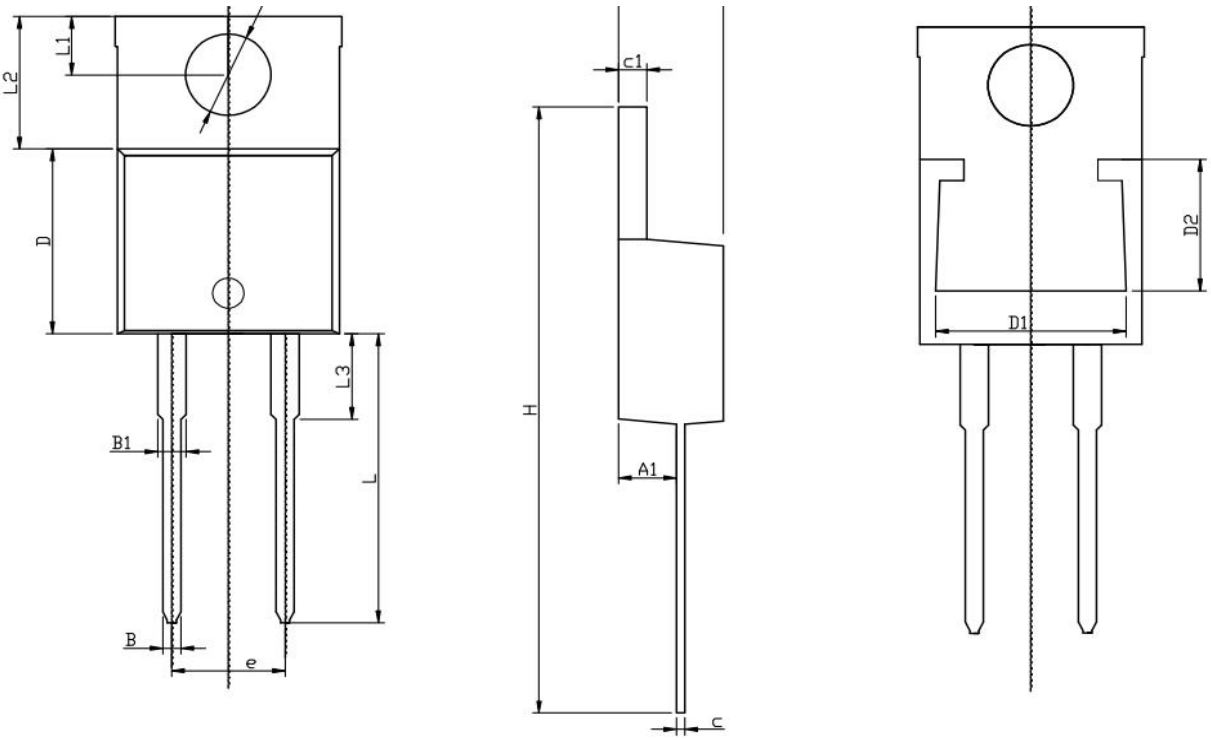
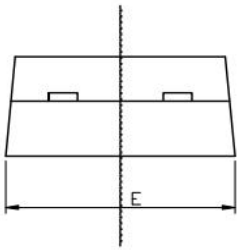


Fig 6: Max. Transient Thermal Impedance

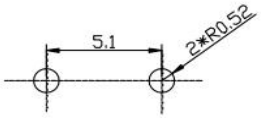


Package Outline: TO-220AD-2L





RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.50	4.70	4.90
A1	2.45	2.60	2.70
B	0.72	0.82	0.92
B1	1.12	1.27	1.42
C	0.28	0.38	0.48
cl	1.17	1.27	1.37
D	8.46	8.66	8.86
D1	7.70	7.90	8.40
D2	5.00	5.20	5.40
e		5.10	
E	9.85	10.15	10.45
H	28.00	28.50	29.00
ϕP		3.84	
L	13.1	13.6	14.1
L1	2.54	2.74	2.94
L2	6.04	6.24	6.44
L3	3.85	4.05	4.35

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