

PESC6065QDQ

Silicon Carbide 650V Schottky Diode



重庆平伟半导体股份有限公司

Features

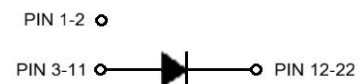
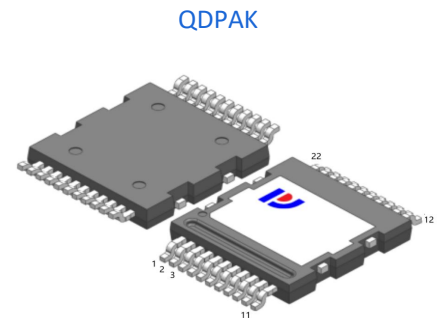
- Revolutionary semiconductor material - Silicon Carbide
- Benchmark switching behavior
- No reverse recovery/ No forward recovery
- Temperature independent switching behavior
- Optimized for high temperature operation
- Qualified according to AEC-Q101 criteria

Applications

- General Automotive Applications
- 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	60A
$T_{j,max}$	175°C

Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
PESC6065QDQ	PESC6065QDQ	QDPAK	Tape&Reel	13 inches	32mm	1000pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	650	V
Continuous forward current for $T_C = 150^{\circ}\text{C}$	I_F	60	A
Non-Repetitive Peak Forward Surge Current $T_C=25^{\circ}\text{C}, t_p=8.3\text{ ms}$, Half Sine Pulse $T_C=150^{\circ}\text{C}, t_p=8.3\text{ ms}$, Half Sine Pulse	I_{FSM}	420 340	A
i^2t value $T_C = 25^{\circ}\text{C}$, $t_p=8.3\text{ ms}$ i^2t value $T_C = 150^{\circ}\text{C}$, $t_p=8.3\text{ ms}$	$\int i^2 dt$	732 480	A^2s
Total power dissipation $T_C = 25^{\circ}\text{C}$	P_D	303	W
Operating junction and storage temperature	T_j, T_{stg}	-55 to +175	$^{\circ}\text{C}$

Thermal Resistance

Parameter	Symbol	Condition	Value			Unit
			min.	typ.	max.	
Thermal resistance, junction – case.	R_{thJC}		-	0.33	0.50	°C/W
Thermal resistance, junction - ambient(min. footprint)	R_{thJA}		-	-	55	°C/W

Electrical Characteristic

Static Characteristic ($T_j=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}	$I_R=100\mu\text{A}$	650	-	-	V
Forward voltage	V_F	$I_F=60\text{A}, T_j=25^{\circ}\text{C}$	-	1.40	1.8	V
		$I_F=60\text{A}, T_j=150^{\circ}\text{C}$	-	1.80	2.4	V
Reverse current	I_R	$V_R=650\text{V}, T_j=25^{\circ}\text{C}$		1	10	μA
		$V_R=650\text{V}, T_j=150^{\circ}\text{C}$	-	20	100	

Dynamic Characteristic ($T_j=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Total capacitance	C	$V_R=0.1\text{V}, f=1\text{MHz}$	-	2894	-	pF
		$V_R=200\text{V}, f=1\text{MHz}$	-	283	-	
		$V_R=400\text{V}, f=1\text{MHz}$	-	280	-	
Total capacitive charge	Q_C	$V_R=400\text{V}, Q_c = \int_0^{V_R} C(V) dV$	-	158	-	nC

Typical Performance Characteristics

Fig 1: Forward Characteristics

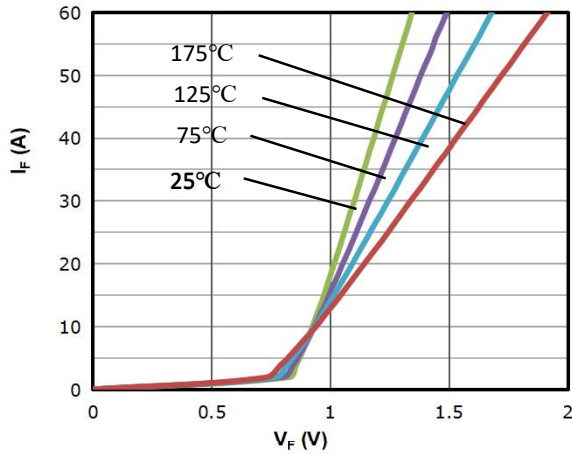


Fig 2: Reverse Characteristics

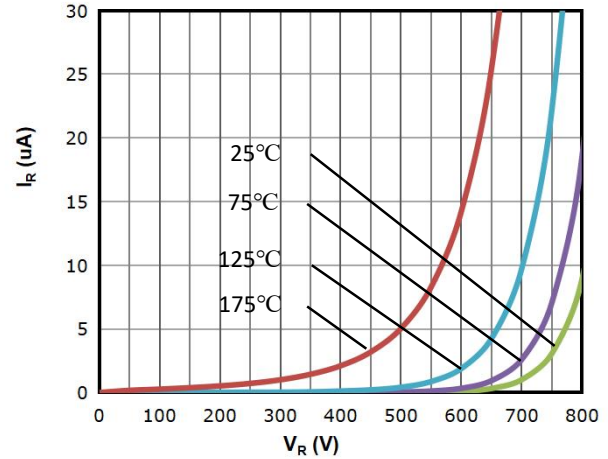


Fig 3: Total Capacitance Charge VS. Reverse Voltage

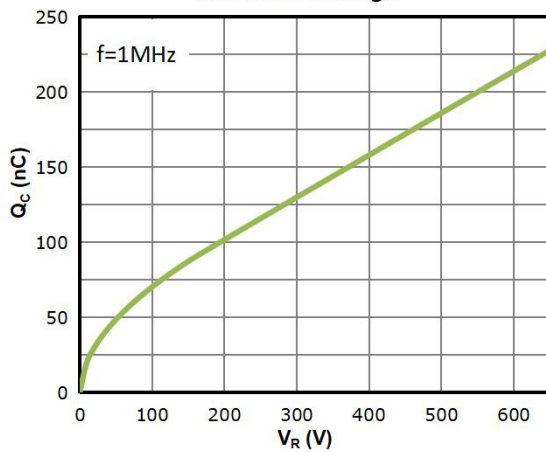


Fig 4: Capacitance Characteristics

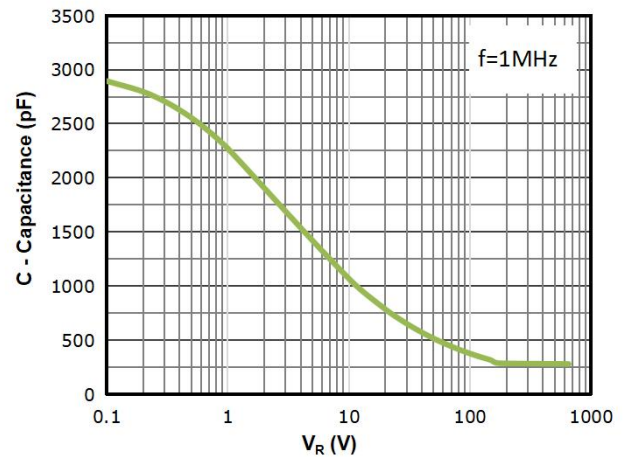


Fig 5: Power Dissipation

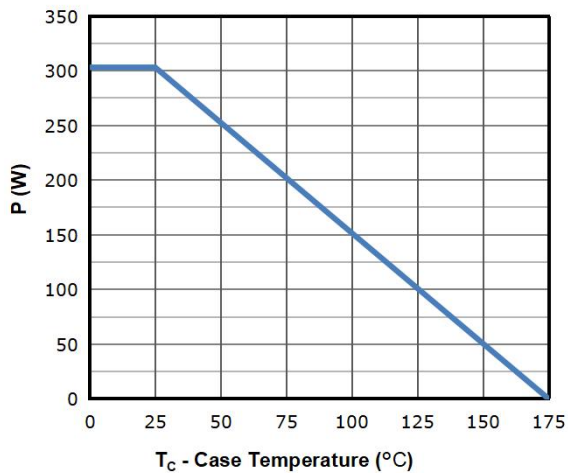
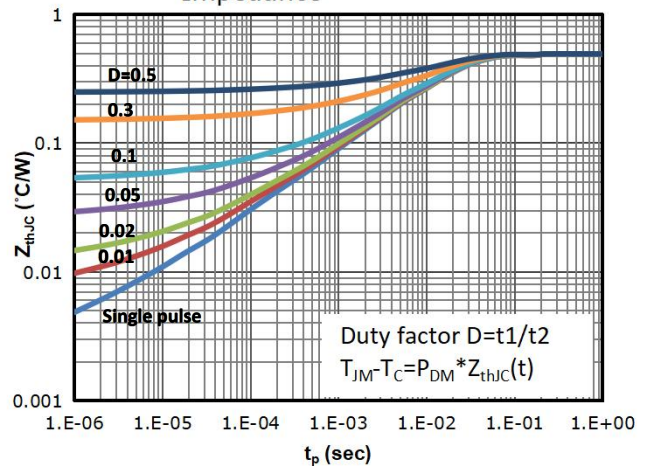
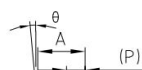


Fig 6: Max. Transient Thermal Impedance



Package Outline: QDPAK

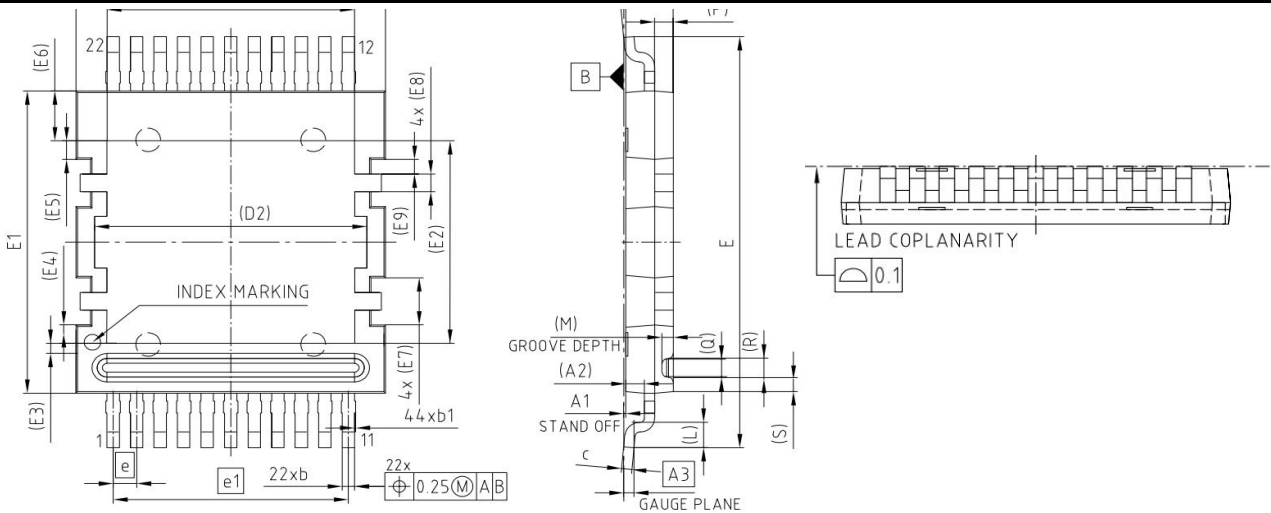


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DIMENSIONS	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.25	2.35	0.089	0.093
A1	0.00	0.15	0.000	0.006
A2	0.90		0.035	
A3	0.50		0.020	
b	0.50	0.70	0.020	0.028
b1	---	0.15	---	0.006
c	0.46	0.58	0.018	0.023
D	14.90	15.10	0.587	0.594
D1	12.00		0.472	
D2	13.20		0.520	
E	20.81	21.11	0.819	0.831
E1	15.30	15.50	0.602	0.610
E2	10.32		0.406	
E3	0.625		0.025	
E4	0.45		0.018	
E5	0.95		0.037	
E6	2.53		0.100	
E7	2.40		0.094	
E8	0.90		0.035	
E9	0.75		0.030	
e	1.14		0.045	
e1	11.4		0.449	
L	1.30		0.051	
M	0.55		0.022	
θ	0°	8°	0°	8°
P	0.90		0.035	
Q	0.94		0.037	
R	1.12		0.044	
S	0.66		0.026	

Revision History

Revision	Date	Major changes
1.0	2025/10/9	Release of Formal Version
1.1	2026/7/20	Update the logo,Update the RJA

Disclaimer

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