

Features

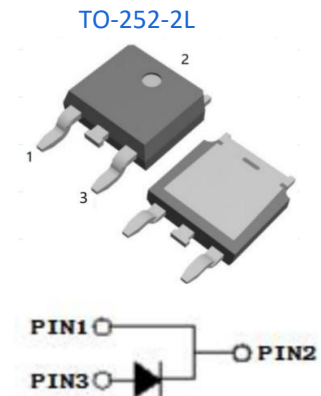
- Revolutionary semiconductor material - Silicon Carbide
- Benchmark switching behavior
- No reverse recovery/ No forward recovery
- Temperature independent switching behavior
- Optimized for high temperature operation
- Qualified according to JEDEC criteria

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	10A
$T_{j,max}$	175°C

Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
PESC1065G	PESC1065G	TO-252-2L	Tape&Reel	13 inches	16mm	2500pcs

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	10	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}	90 80	A
i^2t value $T_C = 25^\circ\text{C}, t_p = 8.3 \text{ ms}$ i^2t value $T_C = 150^\circ\text{C}, t_p = 8.3 \text{ ms}$	$\int i^2 dt$	34 27	A^2s
Total power dissipation $T_C = 25^\circ\text{C}$	P_D	67	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}		-	1.5	2.2	°C/W
Thermal resistance, junction - ambient(min. footprint)	R_{thJA}		-	-	50	°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	$I_F=10\text{A}, T_j=25^{\circ}\text{C}$	-	1.4	1.7	V
		$I_F=10\text{A}, T_j=150^{\circ}\text{C}$	-	1.77	2.0	V
Reverse current	I_R	$V_R=650\text{V}, T_j=25^{\circ}\text{C}$		0.1	10	μA
		$V_R=650\text{V}, T_j=150^{\circ}\text{C}$	-	2	100	

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

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Total capacitance	C	$V_R=0.1\text{V}, f=1\text{MHz}$	-	475	-	pF
		$V_R=200\text{V}, f=1\text{MHz}$	-	49	-	
		$V_R=400\text{V}, f=1\text{MHz}$	-	48	-	
Total capacitive charge	Q_C	$V_R=400\text{V}, Q_c=\int_0^{V_R} C(V)dV$	-	27	-	nC

Typical Performance Characteristics

Fig 1: Forward Characteristics

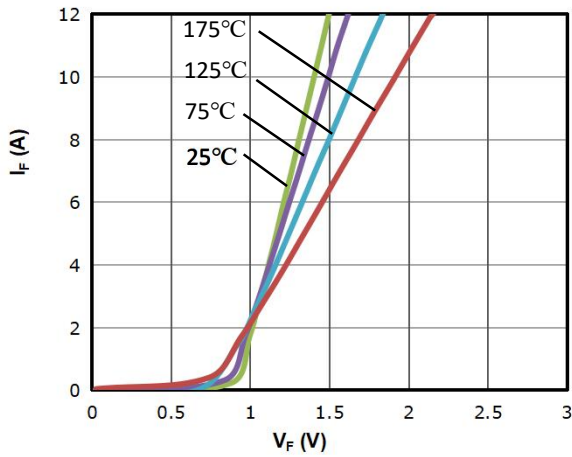


Fig 2: Reverse Characteristics

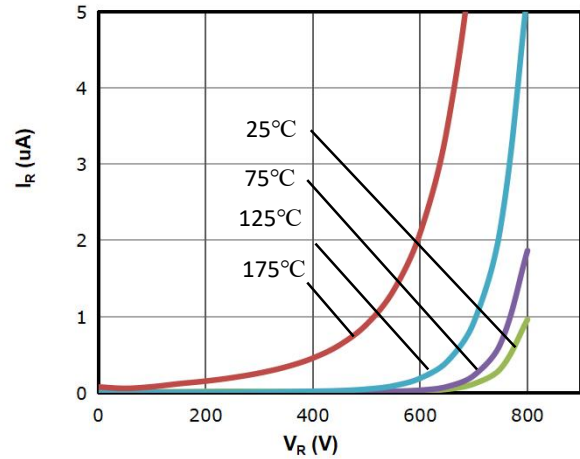


Fig 3: Total Capacitance Charge VS. Reverse Voltage

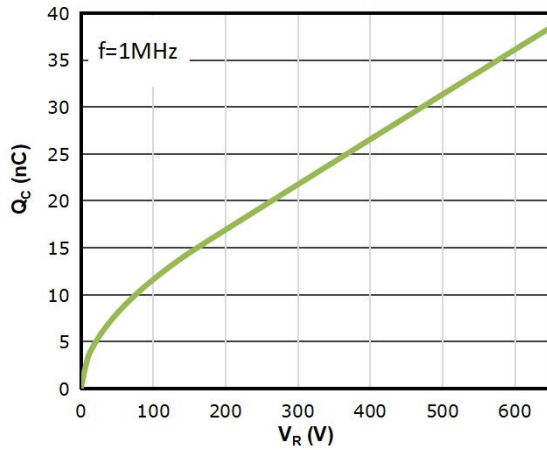


Fig 4: Capacitance Characteristics

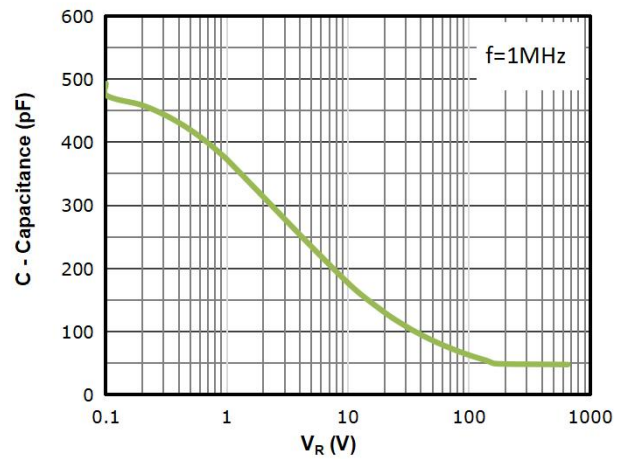


Fig 5: Power Dissipation

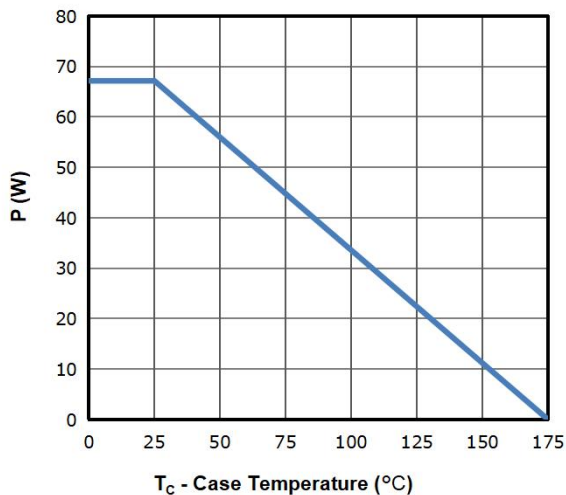
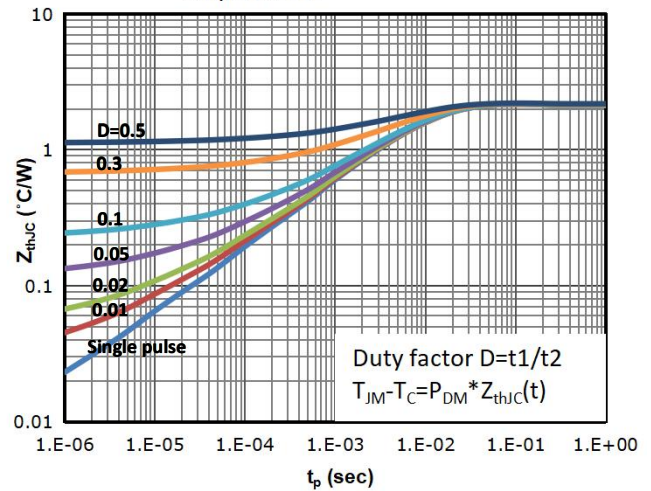
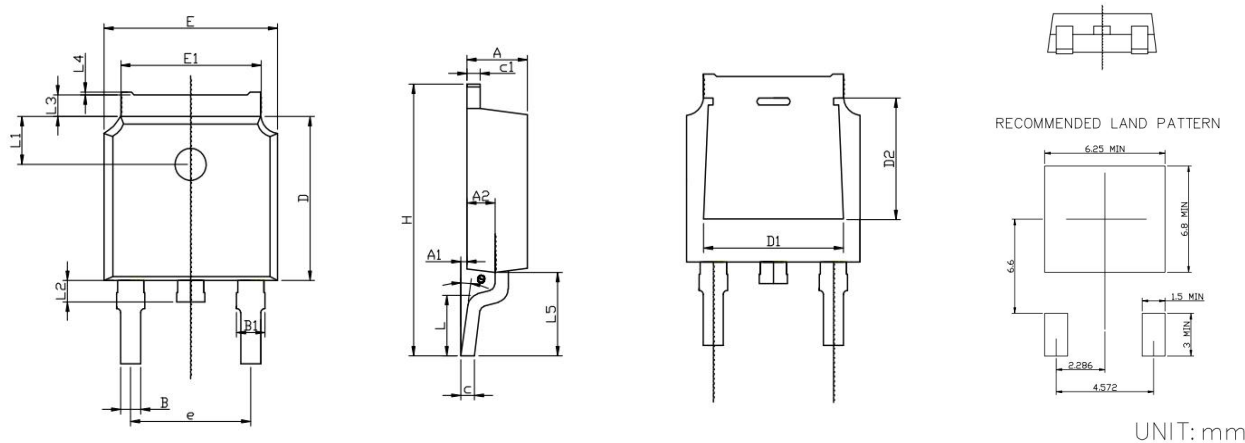


Fig 6: Max. Transient Thermal Impedance





Package Outline: TO-252-2L



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.15	2.45	0.085	0.096
A1	0.05	0.20	0.002	0.008
A2	0.91	1.22	0.036	0.048
B	0.66	0.86	0.026	0.034
B1	0.93	1.23	0.037	0.048
C	0.40	0.60	0.016	0.024
C1	0.40	0.60	0.016	0.024
D	5.95	6.25	0.234	0.246
D1	4.80		0.189	
D2	3.80		0.150	
E	6.45	6.75	0.254	0.266
E1	5.12	5.52	0.202	0.217
L	1.65		0.065	
L1	1.58	1.98	0.062	0.078
L2	0.60	1.00	0.024	0.039
L3	0.70	1.00	0.028	0.039
L4	0.00	0.20	0.000	0.008
L5	2.80	3.40	0.110	0.134
H	9.80	10.40	0.386	0.409
θ	0.00	8.00	0.000	0.315
e	4.57		0.180	

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