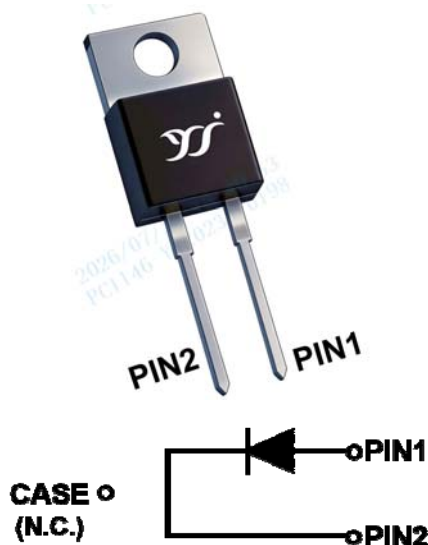


Silicon Carbide Schottky Diode

V_{RRM}	650V
$I_F(135^{\circ}\text{C})$	12A
Q_C	31nC



Features

- Positive temperature coefficient
- Temperature-independent switching
- Maximum working temperature at 175 °C
- Unipolar devices and zero reverse recovery current
- Zero forward recovery current
- Essentially no switching losses
- Reduction of heat sink requirements
- High-frequency operation
- Reduction of EMI
- Insulated package rated at 2.5kV RMS

Typical Applications

Typical applications are in power factor correction(PFC), solar inverter, uninterruptible power supply, motor drives, photovoltaic inverter, electric car and charger.

Mechanical Data

- **Package:** TO-220IS-2L
- **Terminals:** Tin plated leads
- **Polarity:** As marked

■Maximum Ratings ($T_C=25^{\circ}\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Device marking code			D106510PSYG4
Reverse voltage (Repetitive peak) @ $T_J=25^{\circ}\text{C}$	V_{RRM}	V	650
Reverse voltage (Surge peak) @ $T_J=25^{\circ}\text{C}$	V_{RSM}	V	650
Reverse voltage (DC) @ $T_J=25^{\circ}\text{C}$	V_{DC}	V	650
Continuous forward current @ $T_C=25^{\circ}\text{C}$	I_F	A	22
Continuous forward current @ $T_C=135^{\circ}\text{C}$			10
Non-repetitive peak forward surge current @ $T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	I_{FSM}	A	75
Power Dissipation@ $T_C=25^{\circ}\text{C}$	P_{TOT}	W	66
Power Dissipation@ $T_C=110^{\circ}\text{C}$			28
i^2t Value@ $T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$	$\int i^2 dt$	A^2S	28
Operating junction and Storage temperature range	T_J, T_{stg}	$^{\circ}\text{C}$	-55 to +175



YJD106510PSYG4

■Electrical Characteristics (T_J=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Min.	Typ.	Max.
Reverse voltage (DC)	V _{DC}	V	I _R =0.25mA, T _J =25°C	650	–	–
Forward voltage	V _F	V	I _F =10A, T _J =25°C	–	1.35	1.60
			I _F =10A, T _J =175°C	–	1.75	–
Reverse current	I _R	μA	V _R =650V, T _J =25°C	–	0.5	25
			V _R =650V, T _J =175°C	–	5	–
Total capacitive charge	Q _C	nC	V _R =400V, T _J =25°C , Q _C =∫ ₀ ^{V_R} C(V)dV	–	31	–
Total capacitance	C	pF	V _R =0V, f=1MHZ	–	568	–
			V _R =200V, f=1MHZ	–	58	–
			V _R =400V, f=1MHZ	–	56	–
Capacitance stored energy	E _C	μJ	V _R =400V	–	4.8	–

■Thermal Characteristics

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance	R _{θJ-C}	°C/W	2.25

■Isolation Characteristics

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Min.	Typ.	Max.
RMS isolation voltage	V _{isol(RMS)}	V	AC=2.5kV, t=0.5s, 0.01A≤I _R ≤0.3mA	–	–	2500

■Typical Characteristics (Typical)

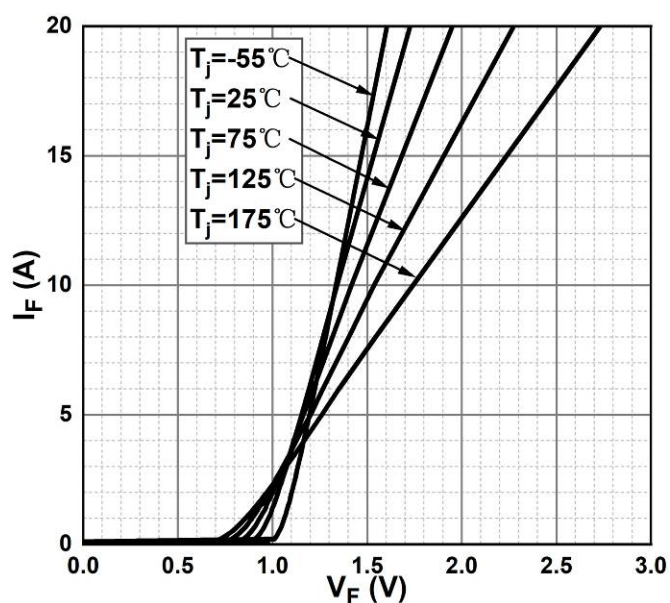


Figure 1. Forward Characteristics

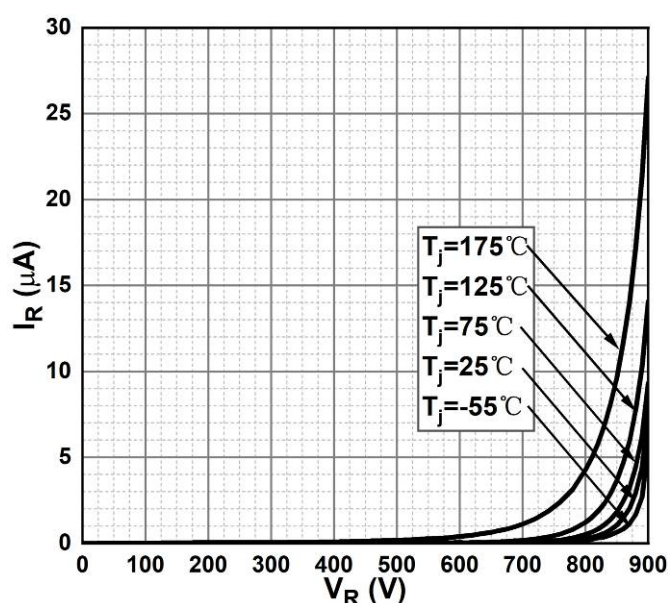


Figure 2. Reverse Characteristics

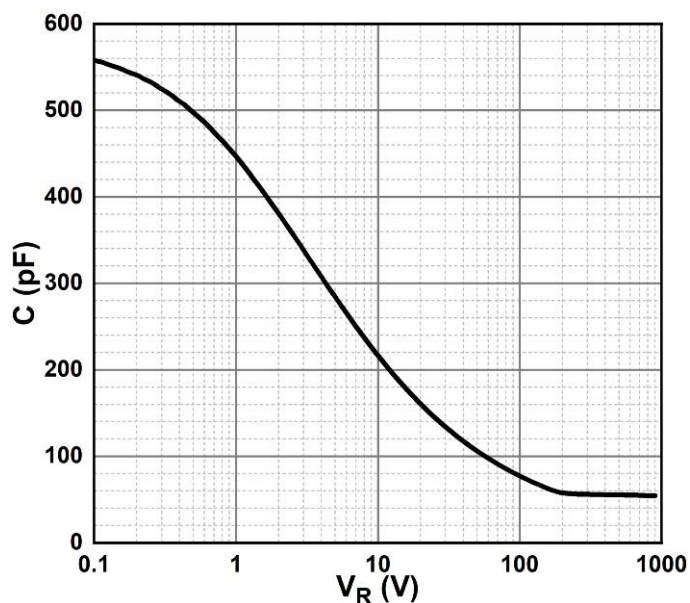


Figure 3. Capacitance vs. Reverse Voltage

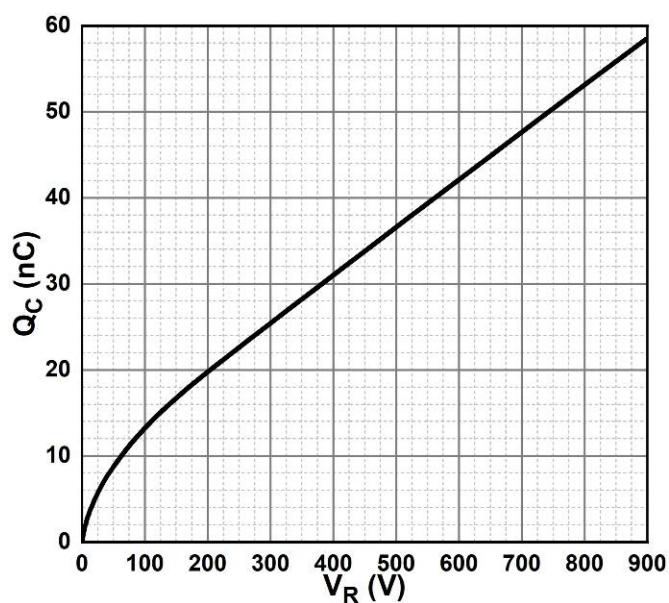


Figure 4. Total Capacitance Charge vs. Reverse Voltage

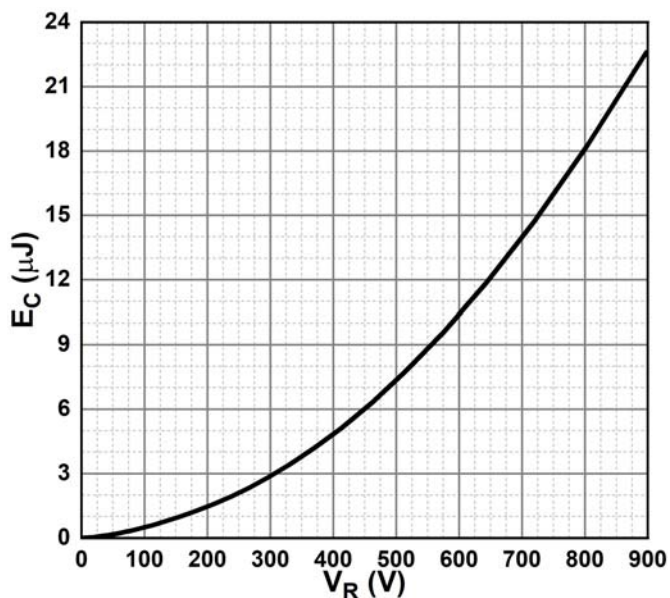


Figure 5. Capacitance Stored Energy

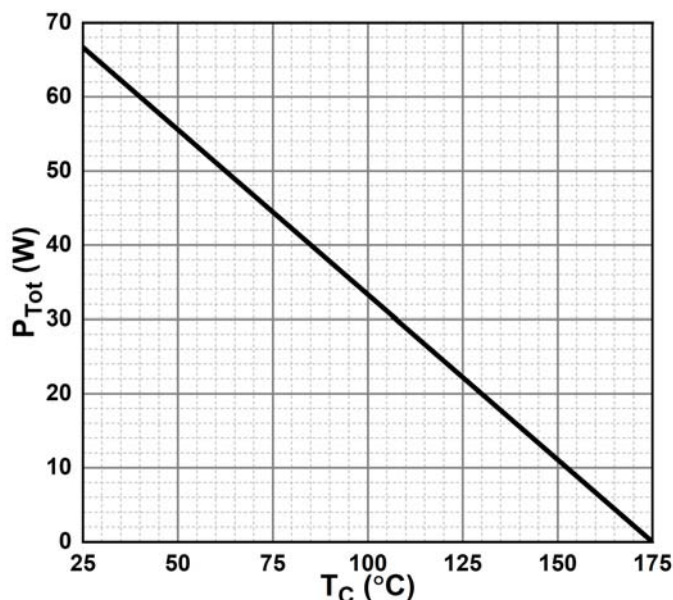


Figure 6. Power Derating

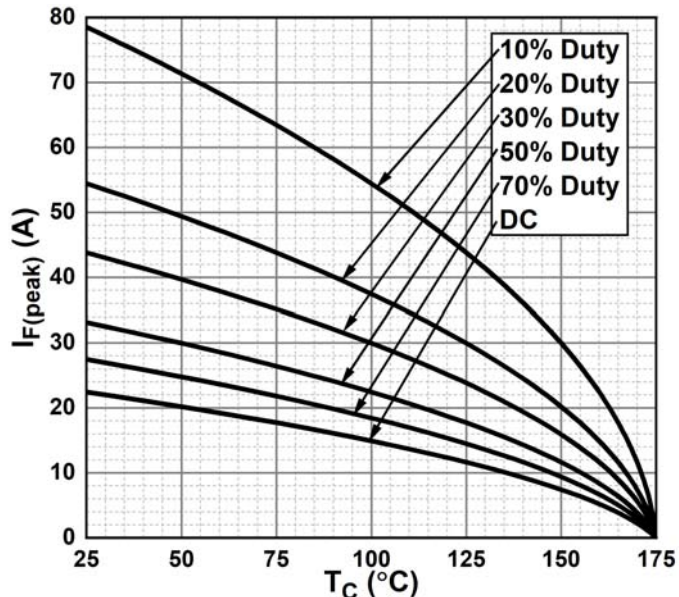


Figure 7. Current Derating

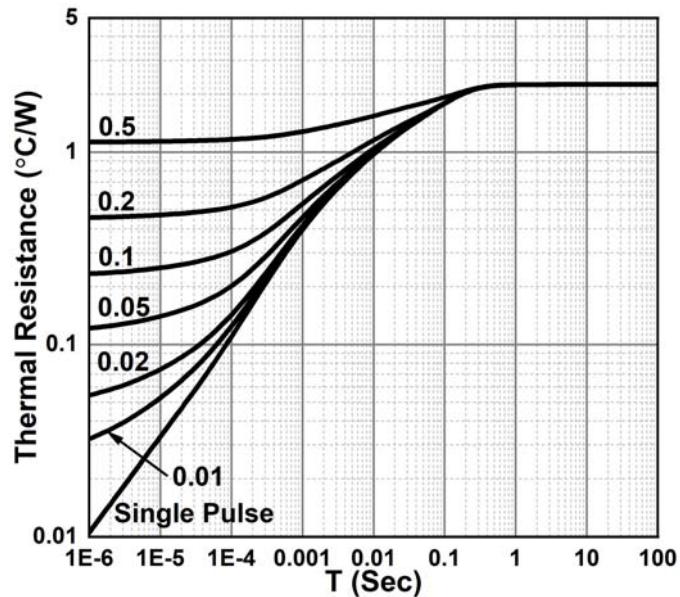
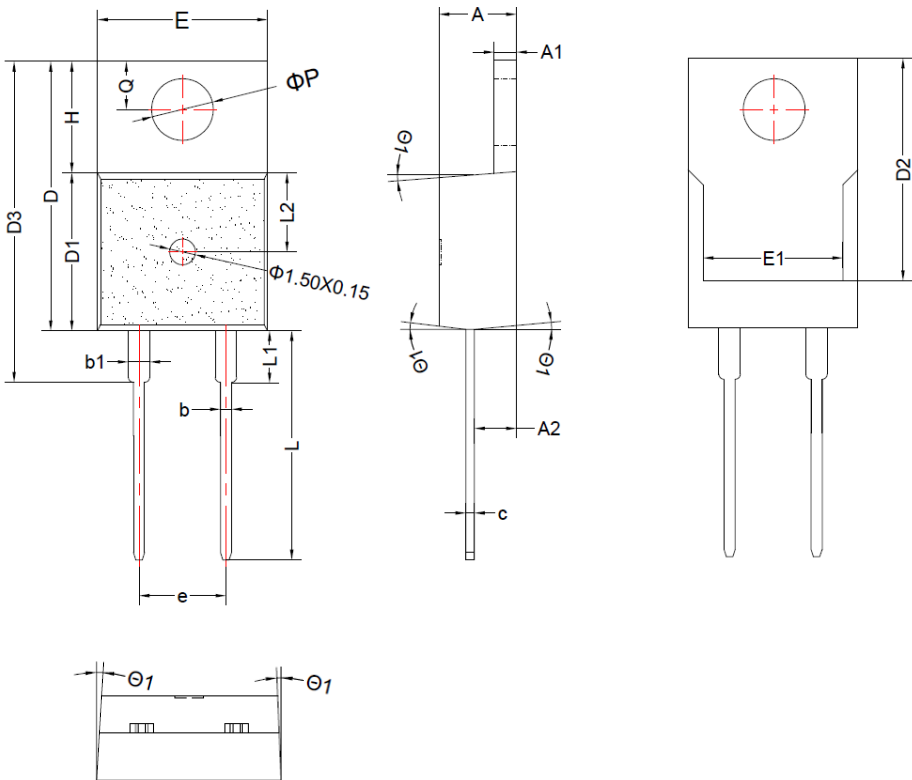


Figure 8. Transient Thermal Impedance



YJD106510PSYG4

■Outline Dimensions



TO-220IS-2L			
Symbol	mm		
	Min	Nom	Max
A	4.40	4.50	4.60
A1	1.25	1.30	1.35
A2	2.30	2.40	2.50
b	0.70	0.80	0.90
b1	1.25	1.33	1.42
c	0.45	0.50	0.55
D	15.50	15.75	16.00
D1	9.10	9.20	9.30
D2	12.90	13.10	13.30
D3	18.45	18.80	19.15
E	9.80	10.02	10.15
E1	7.40	7.60	7.80
e	5.08BSC		
H	6.40	6.50	6.60
L	13.00	13.28	13.45
L1	—	—	3.40
L2	4.50	4.65	4.80
ΦP	3.70	3.80	3.90
Q	2.65	2.75	2.85
θ1	2°	—	7°



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