SFG025N150C3

N-MOSFET 150V, 2.1mΩ, 280A

Features

- Low on resistance
- Low gate charge
- Fast switching
- High avalanche current
- Low reverse transfer capacitances

Product Summary

V_{DS}	150V
$R_{DS(on)\ typ.}$	2.1mΩ
$I_{D(Silicon\ Limited)}$	392A
$I_{D(Package\ Limited)}$	280A

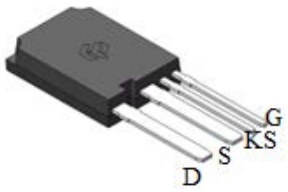
100% DVDS Tested

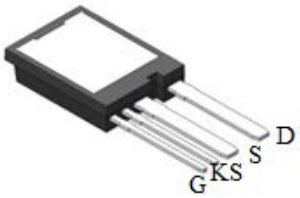
100% Avalanche Tested

RoHS

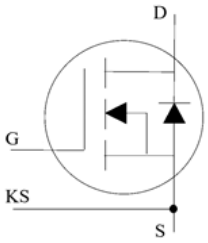
Application

- Brushed and BLDC Motor drive systems
- Battery Management
- DC/DC and AC/DC Converter
- UPS





SFG025N150C3



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
SFG025N150C3	025N150C3	TO-247PLUS-4L	Tube	N/A	N/A	30pcs

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	150	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25℃(Package Limited)	I_D	280	A
	T_C = 100℃(Package Limited)		255	
	T_C = 25℃(Silicon Limited)		392	
Pulsed Drain Current(Tc=25℃,t_p limited by T_{jmax})		$I_{D,Pulse}$	1120	A
Single Pulsed Avalanche Energy(L=3mH,V_{DD}=75V,R_G=25Ω,T_J=25℃)		E_{AS}	1480	mJ
Power Dissipation	T_C = 25℃	P_{tot}	480	W
Junction Temperature		T_J	-55 ~ 150	℃
Storage Temperature		T_{STG}	-55 ~ 150	℃

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance , junction – case	R_{thJC}	0.26	℃/W
Thermal resistance , junction – ambient(min. footprint)	R_{thJA}	34	℃/W

Electrical Characteristics (T_J = 25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250μA	150	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 120V, V_{GS} = 0V T_C=25℃ T_C=125℃	 - -	 - -	 1 100	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.5	3.2	4.5	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 40A	-	2.1	2.5	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 75V, V_{GS} = 0V, f = 1MHz	-	14825	-	pF
Output Capacitance	C_{oss}		-	1680	-	
Reverse Transfer Capacitance	C_{rss}		-	56	-	
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz	-	2.8	-	Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 75V, V_{GS} = 10V, I_D = 40A	-	230	-	nC
Gate-source Charge	Q_{gs}		-	89	-	
Gate-drain Charge	Q_{gd}		-	49	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 75V, V_{GS} = 10V, R_L=3.75Ω, R_G=3Ω	-	32	-	ns
Turn-on Rise Time	t_r		-	100	-	
Turn-off Delay Ttime	$t_{d(off)}$		-	67	-	
Turn-off Fall Time	t_f		-	85	-	

Body Diode Characteristic

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Diode continous forward current	I_S	-	-	-	280	A
Diode pulse current	$I_{S,pulse}$	Pulsed, tp ≤ 10 μs	-	-	1120	A
Body Diode Forward Voltage	V_{SD}	V_{GS} = 0V,I_{SD} = 40A	-	-	1.4	V
Body Diode Reverse Recovery Time	T_{rr}	I_F=40A,di/dt=100A/μs	-	141	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=40A,di/dt=100A/μs	-	738	-	nC

Typical Performance Characteristics

Figure 1: Saturation Characteristics

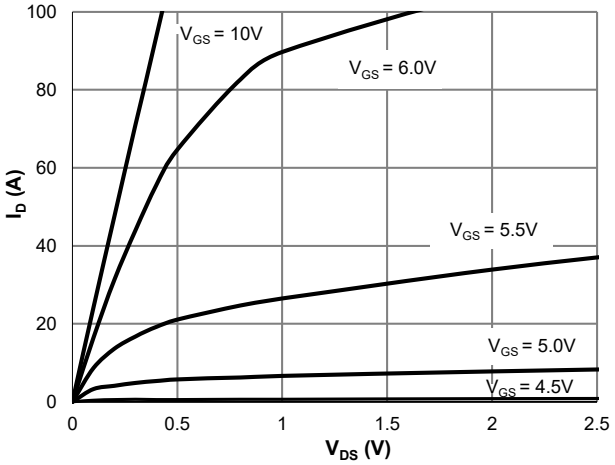


Figure 2: Transfer Characteristics

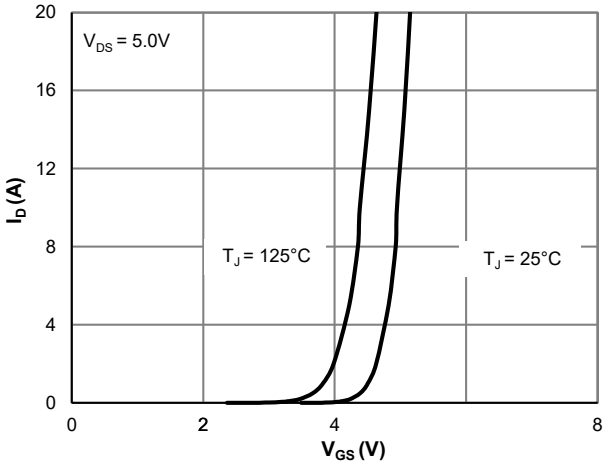


Figure 3: $R_{DS(ON)}$ vs. Drain Current

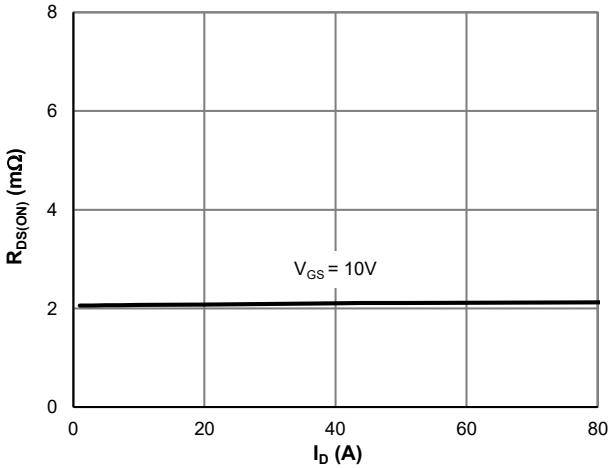


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

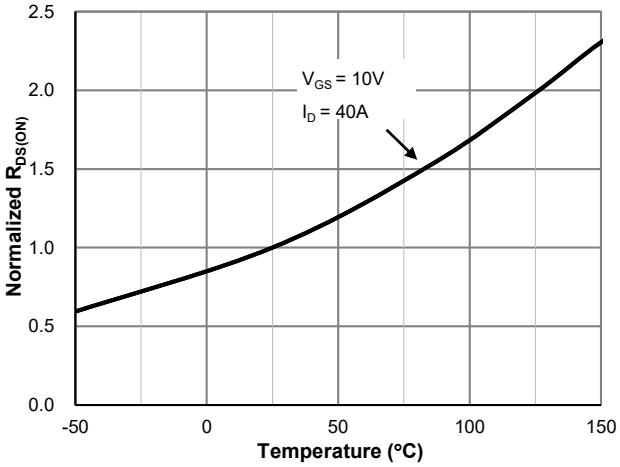


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

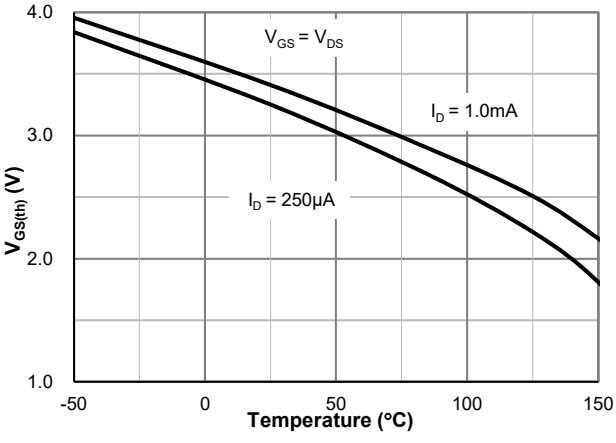


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

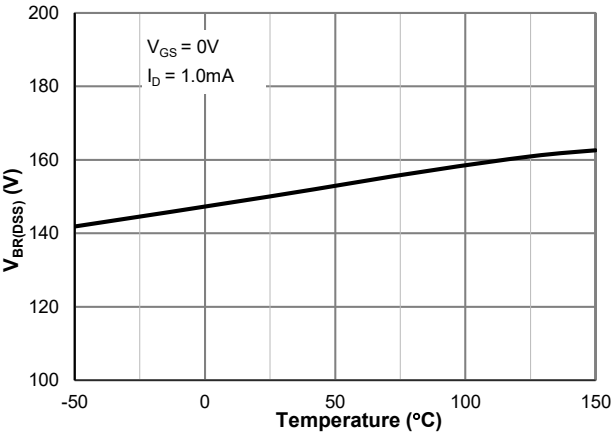


Figure 7: Body-Diode Characteristics

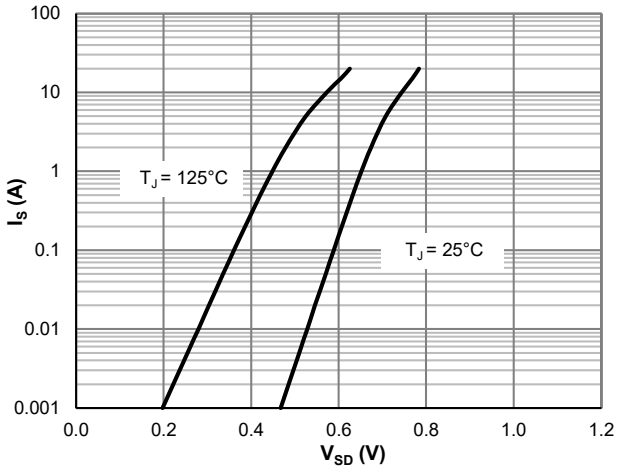


Figure 8: Capacitance Characteristics

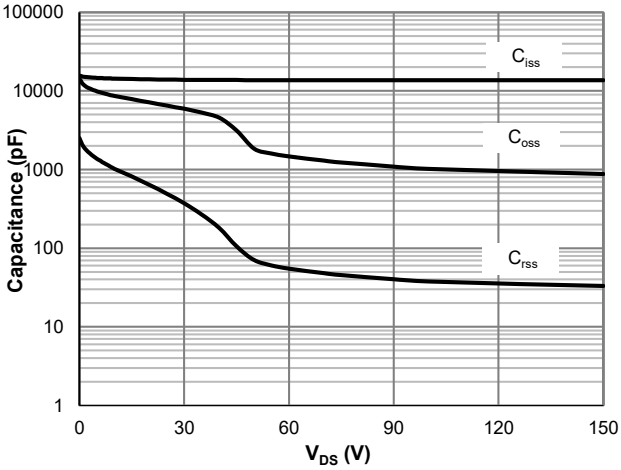


Figure 9: Maximum Safe Operating Area

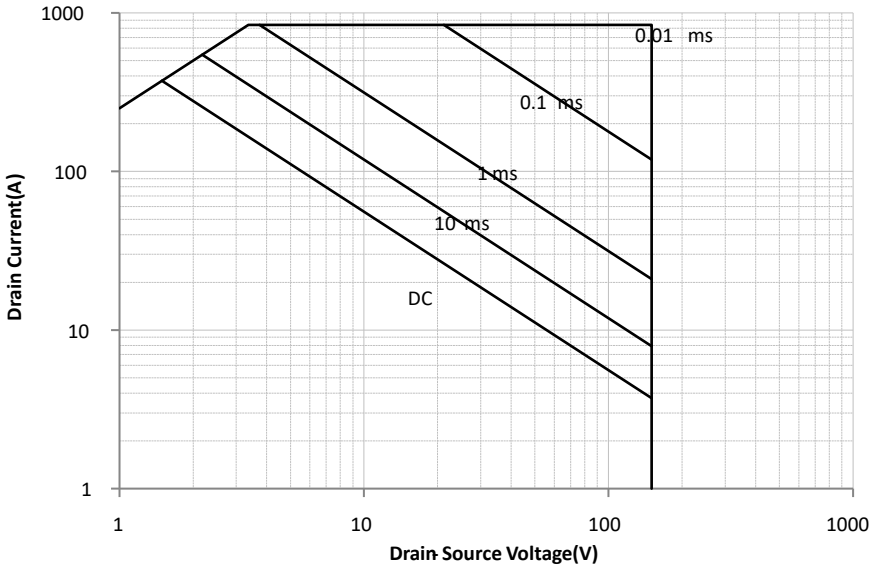
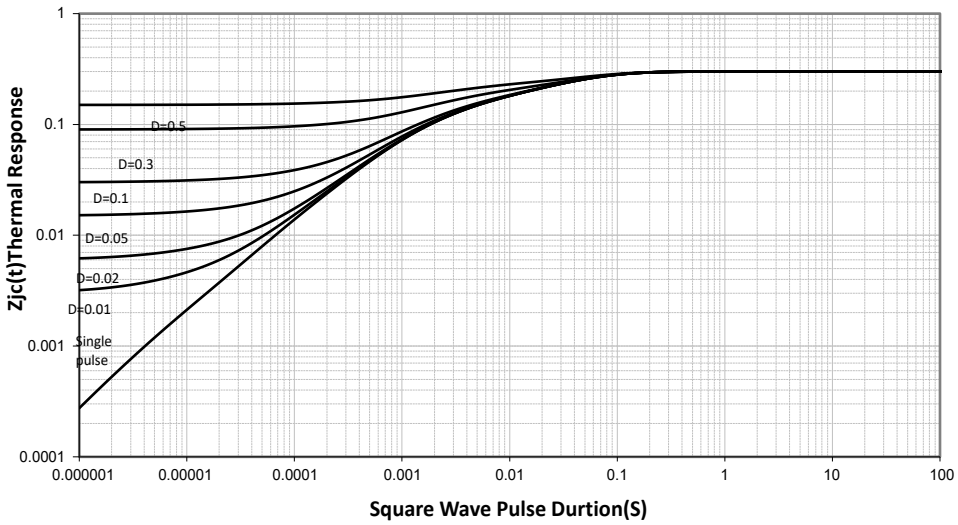
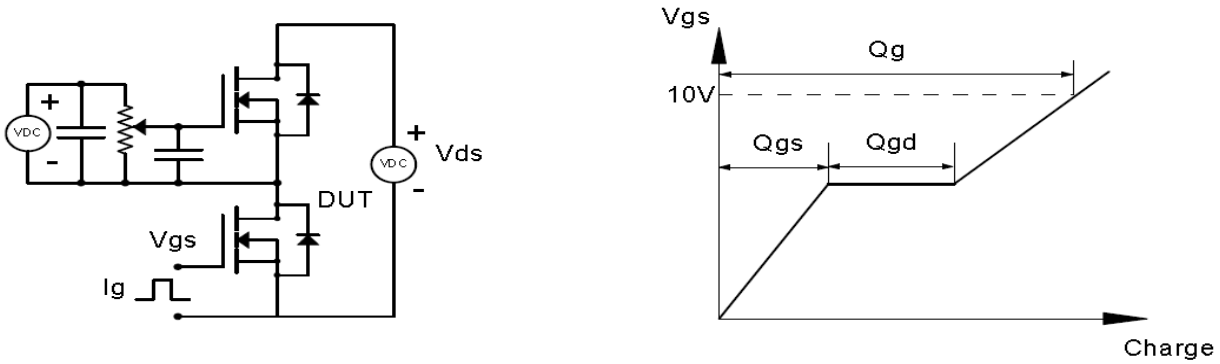


Figure 10: Normalized Maximum Transient Thermal Impedance

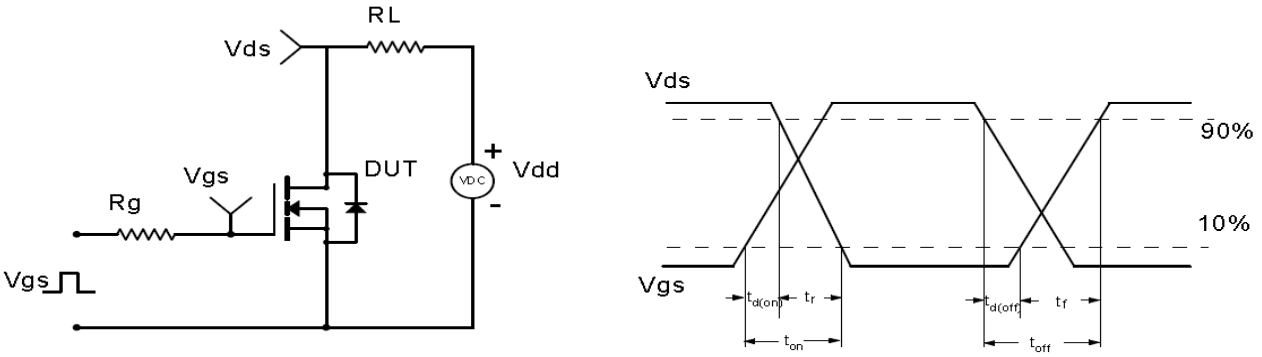


Test Circuit & Waveform

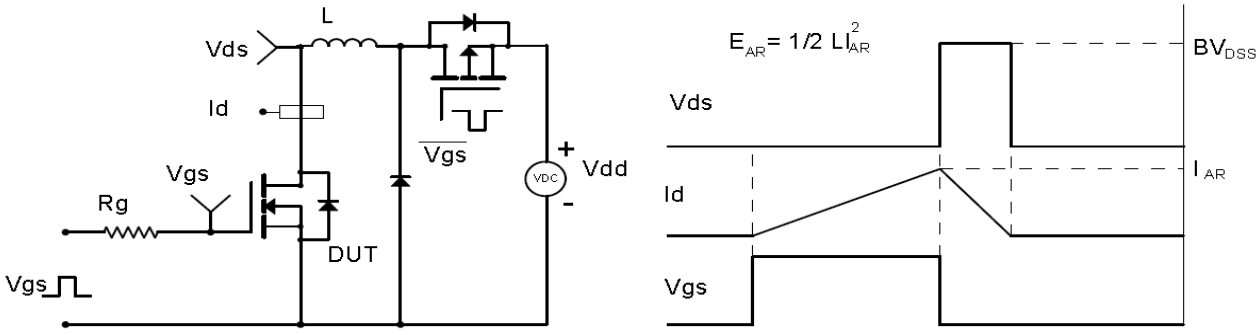
Gate Charge Test Circuit & Waveform



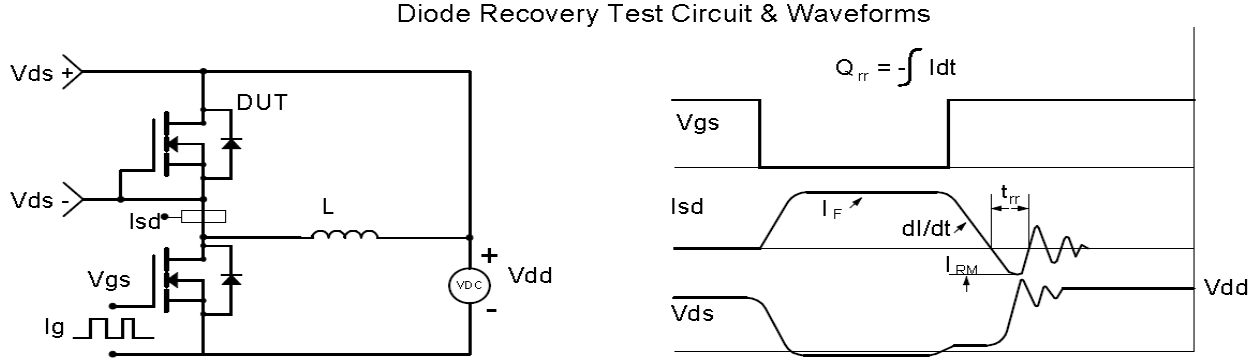
Resistive Switching Test Circuit & Waveforms



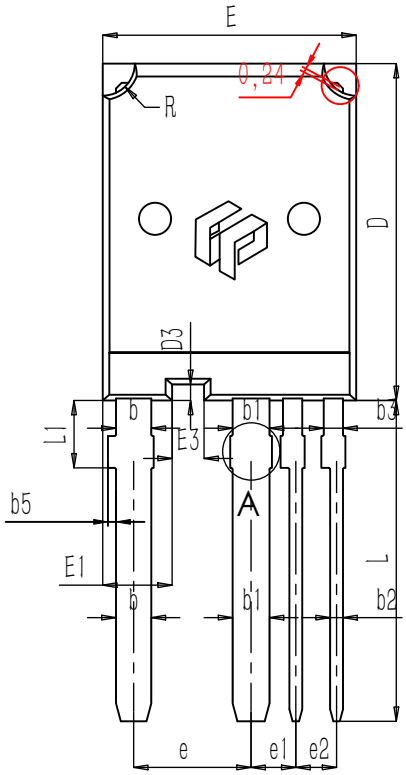
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

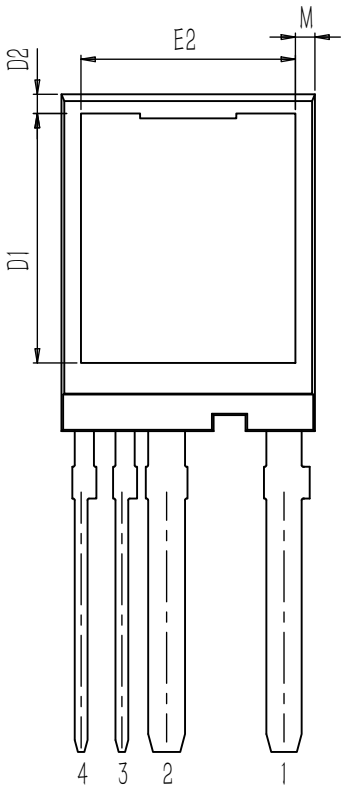


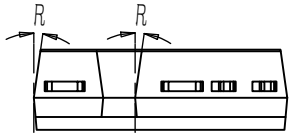
Diode Recovery Test Circuit & Waveforms

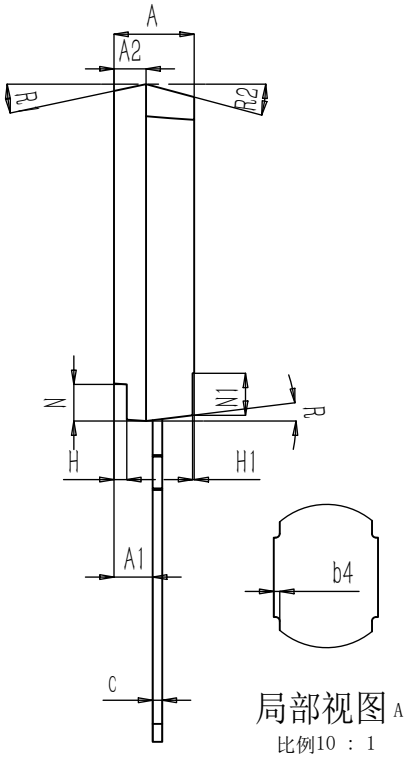


Package Outline: TO-247PLUS-4L









局部视图 A

比例10 ： 1

DIMENSION	MILLIMETERS		
	MIN	NOM	MAX
A	4.95	5	5.05
A1	2.36	2.41	2.46
A2	1.95	2	2.05
b	2.15	2.2	2.25
b1	2.25	2.3	2.35
b2	0.75	0.8	0.85
b3	1.15	1.2	1.25
b4		MAX0.075	
b5	0.45	0.5	0.55
c	0.595	0.6	0.635
D	20.9	21	21.1
D1	15.05	15.55	16.05
D2	1.15	1.2	1.25
D3	0.95	1	1.05
E	15.75	15.8	16.85
E1	4.2	4.33	4.4
E2	13.3	13.37	13.5
E3	1.95	2	2.05
e		7.32	
e1		2.79	
e2		2.54	
H	0.75	0.8	0.85
H1	0.05	0.1	0.15
L	19.9	20	20.1
L1	4.1	4.2	4.3
M	1.17	1.22	1.27
N	2.2	2.3	2.4
N1	2.5	2.6	2.7
R	1.9	2	2.1
S		8°	
S1		12°	
S2		15°	

Revision History

Revision	Date	Major Changes
1.0	2023-7-28	Release of formal version

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qulified as a standard commercial product and is not intended for use in applications that require extraordinary levels of quality and reliability, such as automotive, aviation/aerospace and life-support devices or systems.

Any and all semicondutor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.

Scilicon Electric reserves the right to improve product design,function and reliability without notice.