

Features

- Uses advanced SGT technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent gate charge x $R_{DS(on)}$ product(FOM)

Product Summary

V_{DS}	150V
$R_{DS(on)}$	2.3mΩ
I_D	193A

100% DVDS Tested

100% Avalanche Tested

Application

- Motor control and drives
- Battery management
- DC/DC and AC/DC converter
- UPS



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
SFG026N150I3	026N150I3	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°C (Package limited)	I _D	193	A
	T _C = 100°C (Package limited)		140	
Pulsed Drain Current(Tc=25°C,t _p limited by T _{jmax})		I _{D,Pulse}	772	A
Single Pulsed Avalanche Energy(L=0.5mH)		E _{AS}	2036	mJ
Power Dissipation	T _C = 25°C	P _{tot}	446	W
Junction Temperature		T _J	-55~ +150	°C
Storage Temperature		T _{STG}	-55~ +150	°C

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance , junction – case	R_{thJC}	0.28	°C/W
Thermal resistance , junction – ambient(min. footprint)	R_{thJA}	37	°C/W

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	150	-	-	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =150V, V _{GS} = 0V, T _C = 25℃	-	-	1	μA
		V _{DS} =150V,V _{GS} = 0V, T _C = 55℃	-	-	10	μA
I _{GSS}	Gate-Source Leakage Current	V _{DS} = 0V, V _{GS} = ±20V	-100	-	100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	3	-	4.6	V
R _{DS(on)}	Static Drain-Source On-Resistance note2	V _{GS} = 10V, I _D =100A	-	2.3	2.7	mΩ
g _{FS}	Forward Transconductance	V _{DS} = 5V, I _D =100A	-	241	-	S
Dynamic Characteristics						
R _g	Gate Resistance		-	1.3	-	Ω
C _{iss}	Input Capacitance	V _{DS} = 75V, V _{GS} = 0V, f = 1MHz	-	13900	-	pF
C _{oss}	Output Capacitance		-	1180	-	pF
C _{rss}	Reverse Transfer Capacitance		-	36	-	pF
Q _g	Total Gate Charge	V _{DS} =75V, I _D = 100A, V _{GS} = 10V	-	180	-	nC
Q _{gs}	Gate-Source Charge		-	75	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	41	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} = 75V, I _D = 100A, R _G = 1Ω, V _{GS} = 10V	-	80	-	ns
t _r	Turn-On Rise Time		-	40	-	ns
t _{d(off)}	Turn-Off Delay Time		-	150	-	ns
t _f	Turn-Off Fall Time		-	30	-	ns
Source-Drain Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Diode Forward Current		-	-	445	A
I _{SM}	Maximum Pulsed Diode Forward Current		-	-	1335	A
t _{rr}	Reverse Recovery Time	T _J = 25℃, I _S = 100A, V _{GS} = 0V di/dt = 150A/μs	-	150	-	ns
Q _{rr}	Reverse Recovery Charge		-	1100	-	nC
V _{SD}	Source to Drain Diode Forward Voltage	T _J = 25℃, I _S = 100A, V _{GS} = 0V	-	0.90	-	V

Typical Performance Characteristics

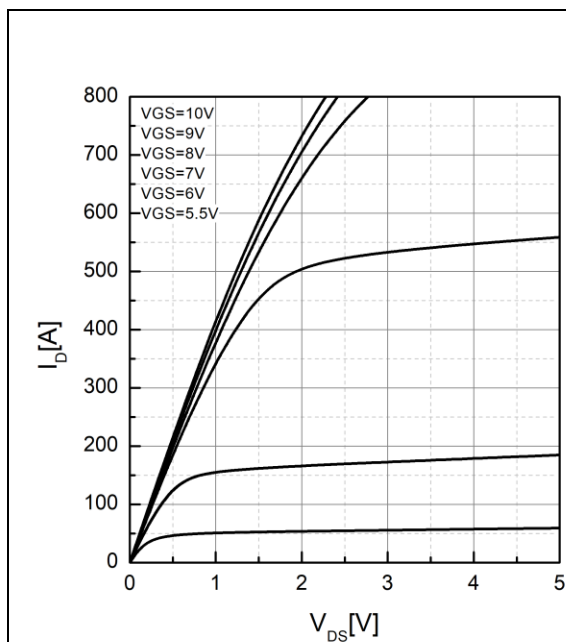


Figure 1. Output Characteristics, $T_J = 25^\circ\text{C}$

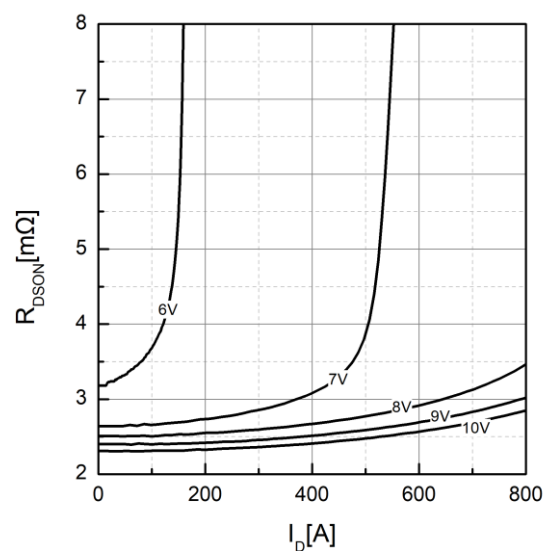


Figure 2. Drain-source on resistance, $T_J = 25^\circ\text{C}$

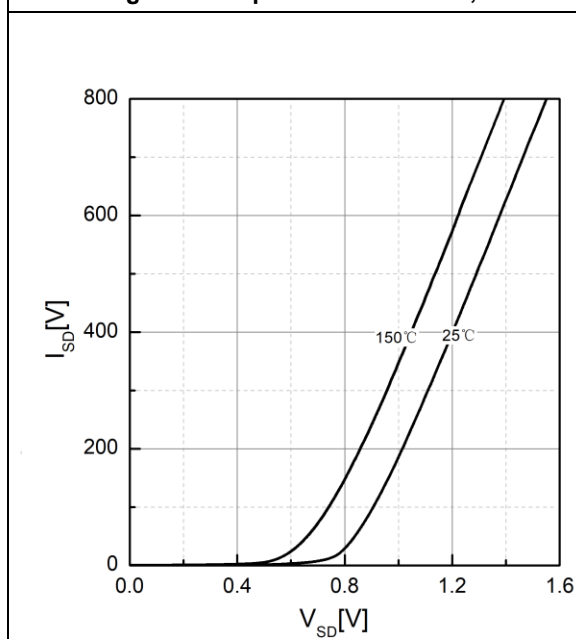


Figure 3. Forward characteristics of body diode

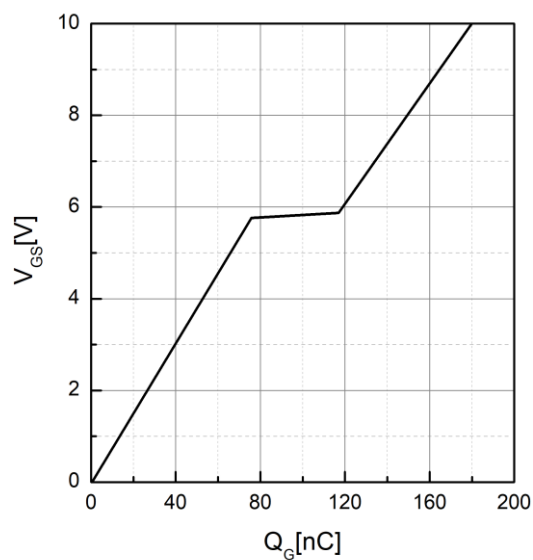
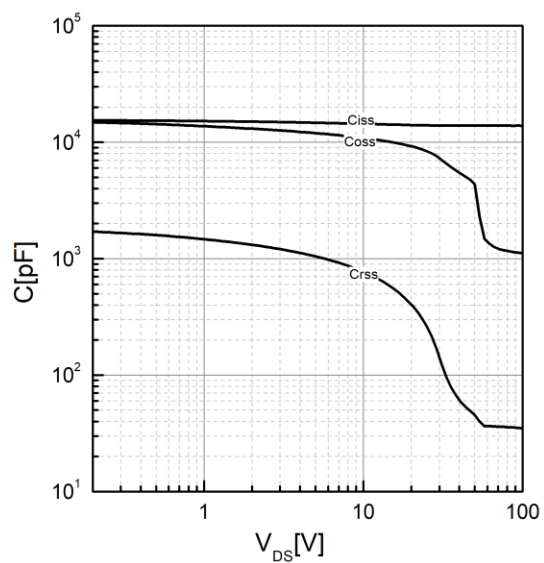
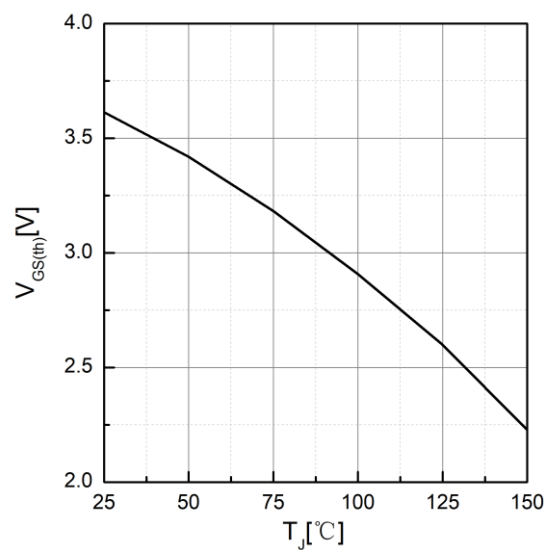
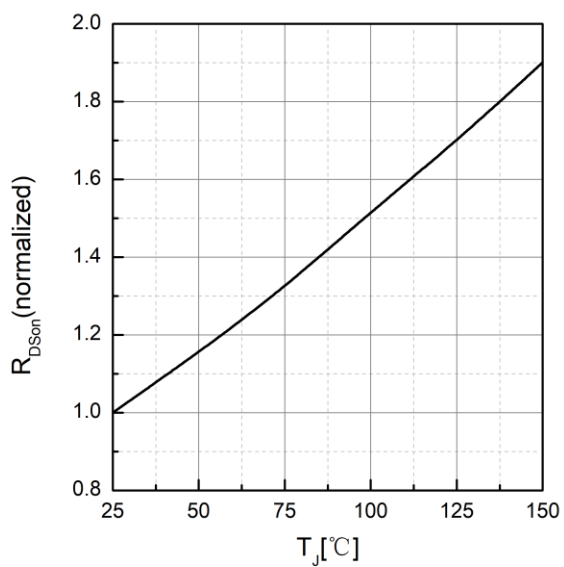
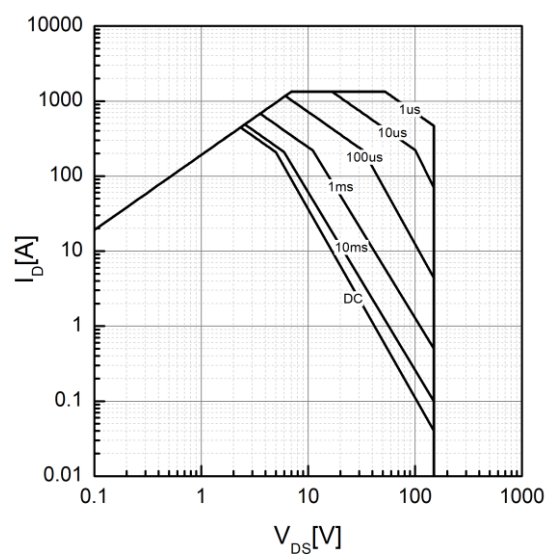
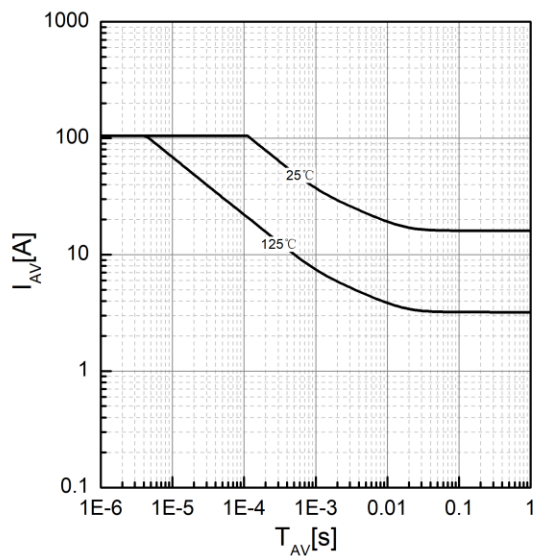
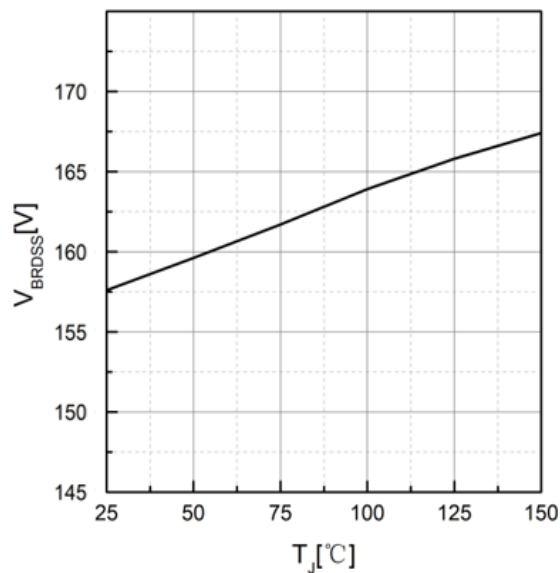
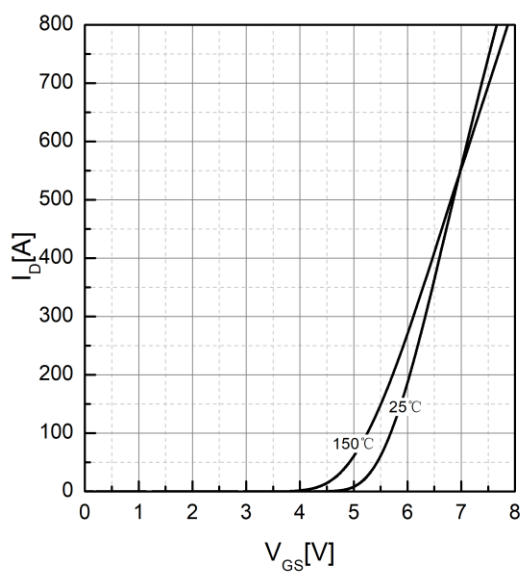
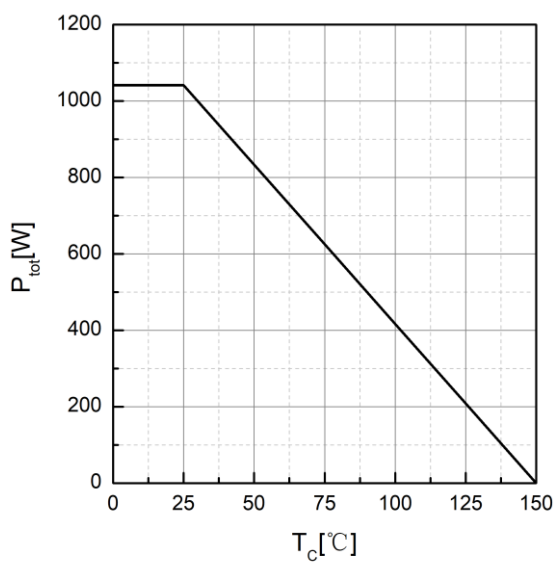
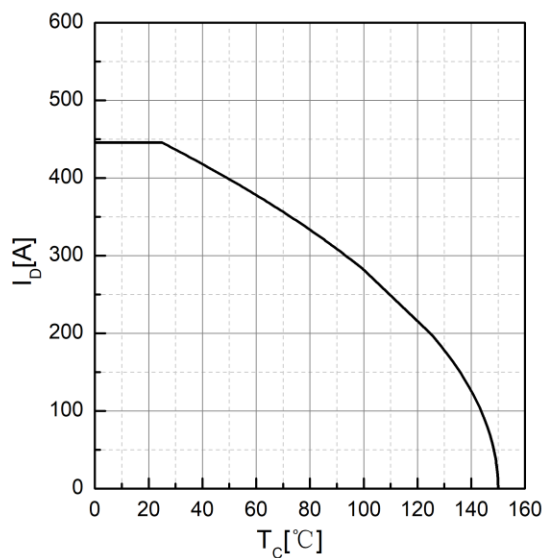
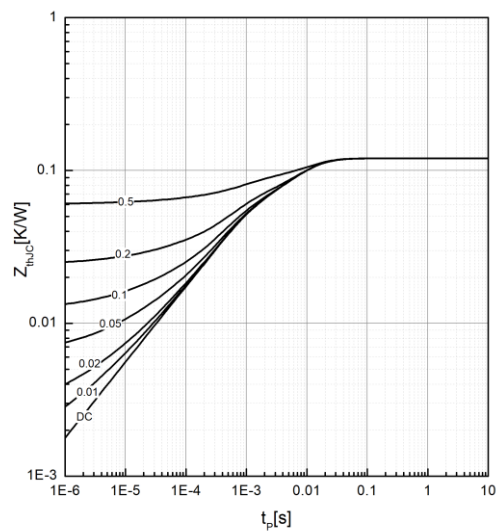
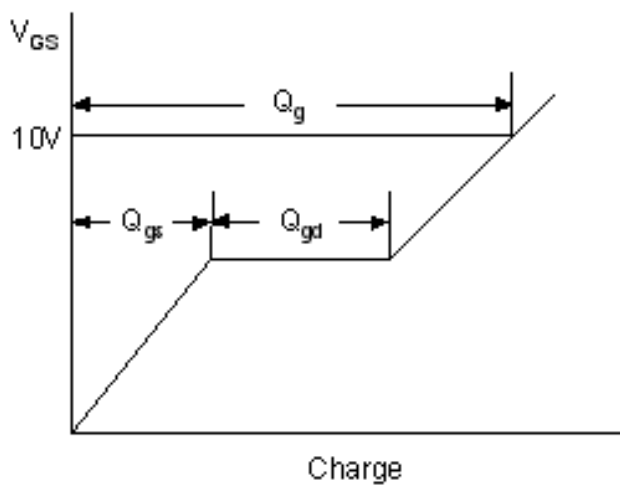
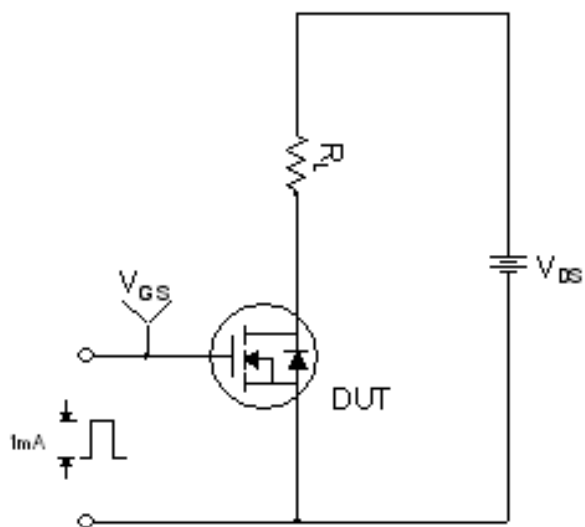


Figure 4. Gate Charge Characteristics


Figure 5. Capacitance Characteristics

Figure 6. Threshold Voltage Vs. Temperature

Figure 7. Drain-source on-state resistance

Figure 8. Maximum Safe Operating Area


Figure 9. Avalanche characteristics

Figure 10. Drain-source breakdown voltage

Figure 11. Transfer characteristics

Figure 12. Power dissipation


Figure 13. Drain current

Figure 14. Effective Transient Thermal Impedance

Figure 15. Gate Charge Test Circuit & Waveform

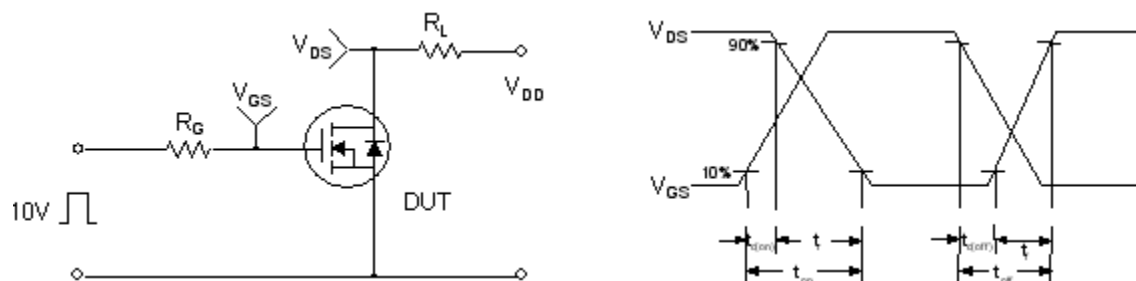


Figure 16. Resistive Switching Test Circuit & Waveforms

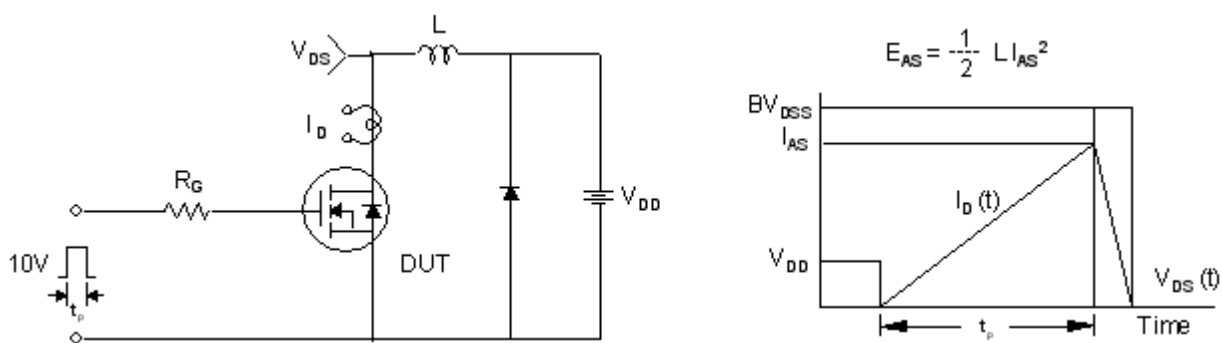
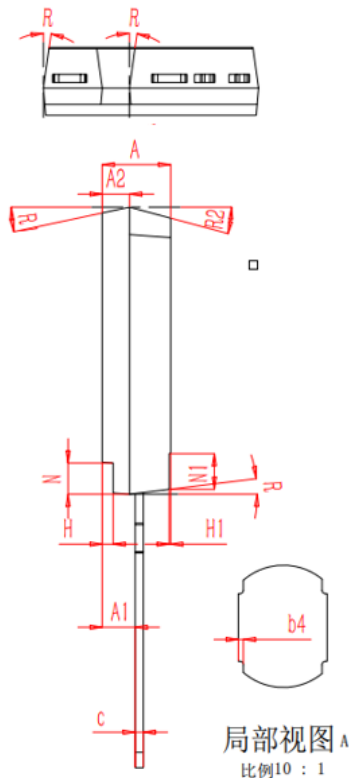
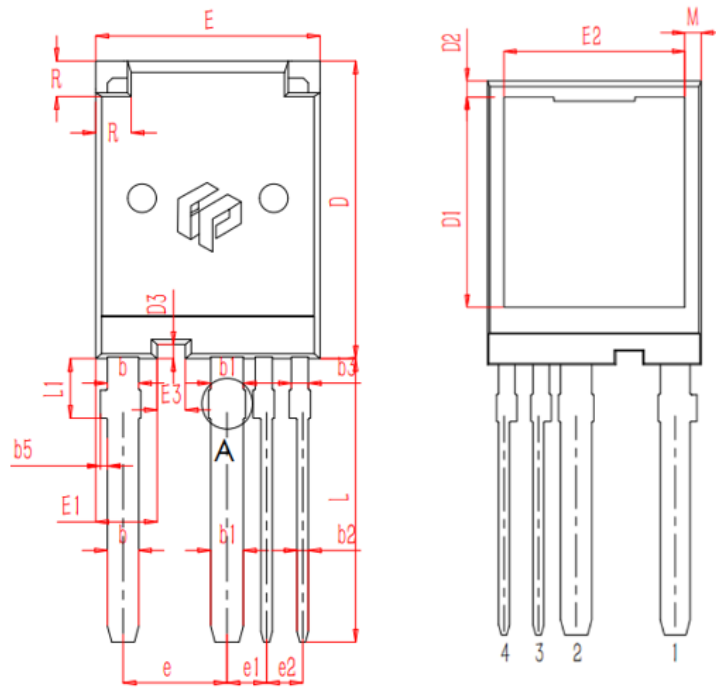


Figure 17. Unclamped Inductive Switching Test Circuit & Waveforms

Package Outline TO247PLUS-4L



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	2.2	2.5	2.8
S	8°		
S1	12°		
S2	15°		

Revision History

Revision	Date	Major Changes
Preliminary	2024-8-27	Release of provisional version
ENG	2024-10-12	Release of engineering version

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qualified 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 semiconductor 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.