SP010N02AGHTF

100V N-Channel Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	1.7mΩ@10V	275A

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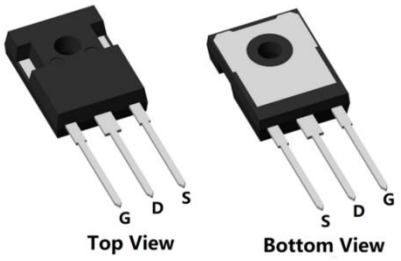
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Applications

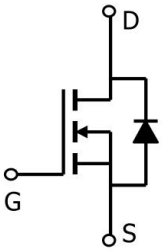
- Power switching application
- DC-DC Converter
- Power Management

Package

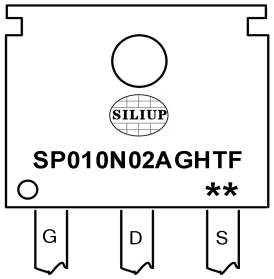


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



SP010N02AGHTF : Product code
**** : Week code**

Order Information

Device	Package	Unit/Tube
SP010N02AGHTF	TO-247	30

Absolute maximum ratings (Ta=25℃,unless otherwise noted)

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (Tc=25℃)	Silicon Limit	I_D	300	A
Continuous Drain Current (Tc=25℃)	Package Limit	I_D	275	A
Continuous Drain Current (Tc=100℃)		I_D	183	A
Pulsed Drain Current		I_{DM}	1100	A
Single Pulse Avalanche Energy[1]		E_{AS}	2025	mJ
Power Dissipation (Tc=25℃)		P_D	300	W
Power Dissipation (Tc=100℃)		P_D	120	W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	0.42	℃/W
Storage Temperature Range		T_{STG}	-55 to 150	℃
Operating Junction Temperature Range		T_J	-55 to 150	℃

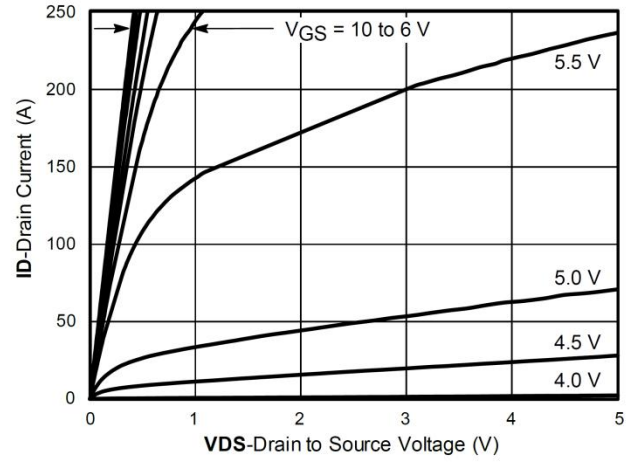
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	100	-	-	V
Drain Cut-Off Current	I_{DSS}	VDS=80V , VGS=0V , TJ=25℃	-	-	1	μA
Gate Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =250uA	2	3	4	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS=10V , ID=20A	-	1.7	2.15	mΩ
Gate Resistance	R_G	VDS=50V , VGS=0V , f=1MHz	-	2.5	-	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS=50V , VGS=0V , f=1MHz	-	9499	-	pF
Output Capacitance	C_{oss}		-	1465	-	
Reverse Transfer Capacitance	C_{rss}		-	52	-	
Total Gate Charge	Q_g	VDS=50V , VGS=10V , ID=100A	-	139	-	nC
Gate-Source Charge	Q_{gs}		-	35.7	-	
Gate-Drain Charge	Q_{gd}		-	25	-	
Gate Pleteau Vlotage	$V_{pleteau}$		-	5	-	V
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VDD=50V , VGS=10V , RG=4Ω, ID=100A	-	20	-	nS
Rise Time	t_r		-	59.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	70	-	
Fall Time	t_f		-	23	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	IS = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	275	A
Reverse Recovery Time	Trr	IS=50A, di/dt=100A/us, TJ=25℃	-	96	-	nS
Reverse Recovery Charge	Qrr		-	196	-	nC

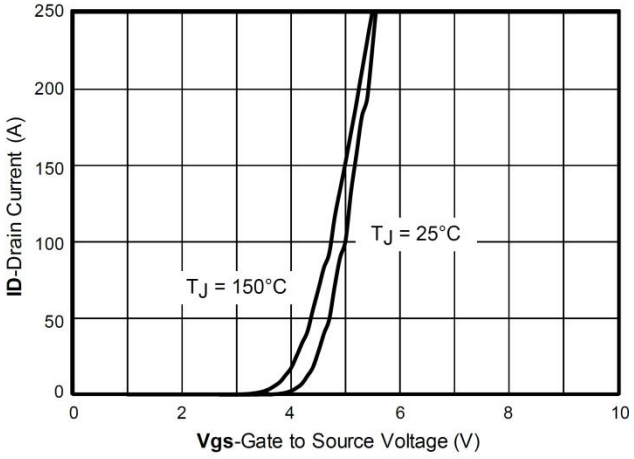
Note :

1. The test condition is VDD=50V,VGS=10V,L=0.5mH,RG=25Ω

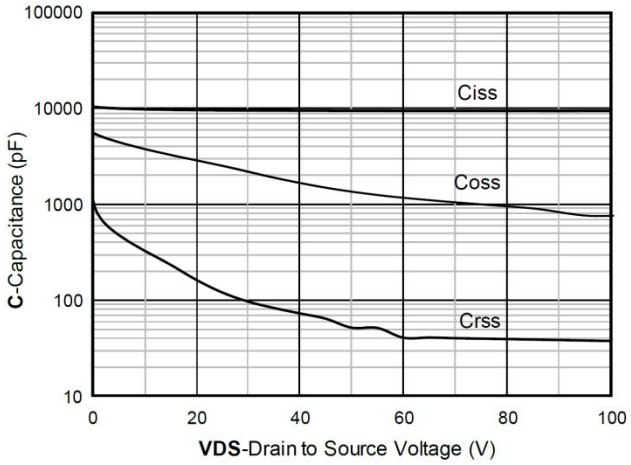
Typical Characteristics



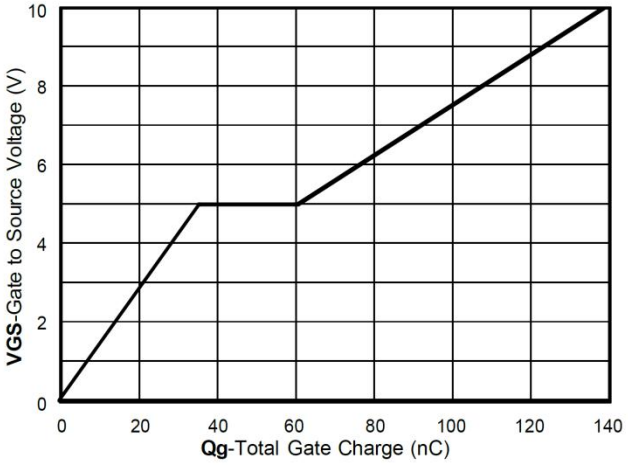
Output Characteristics



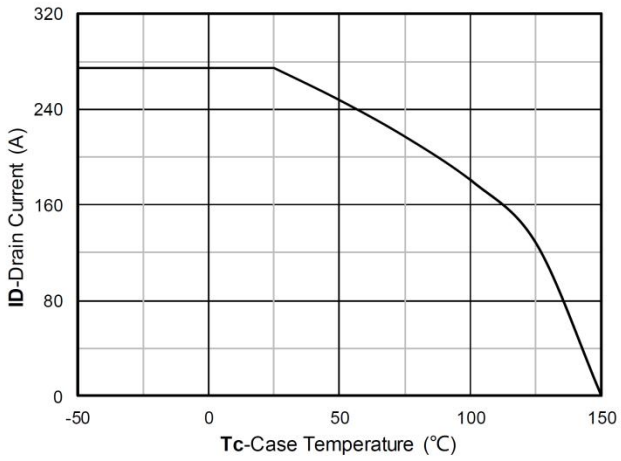
Transfer Characteristics



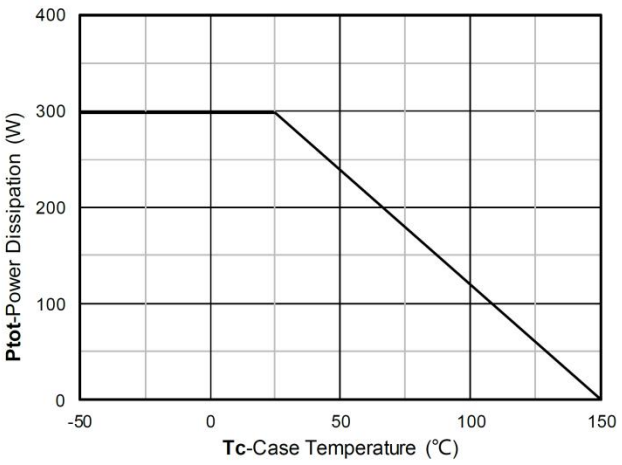
Capacitance Characteristics



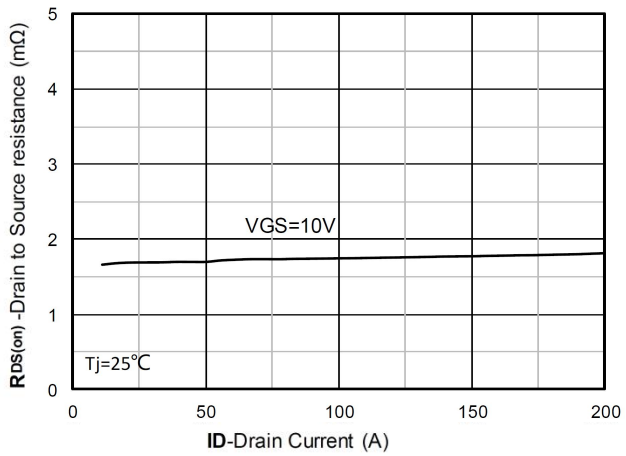
Gate Charge



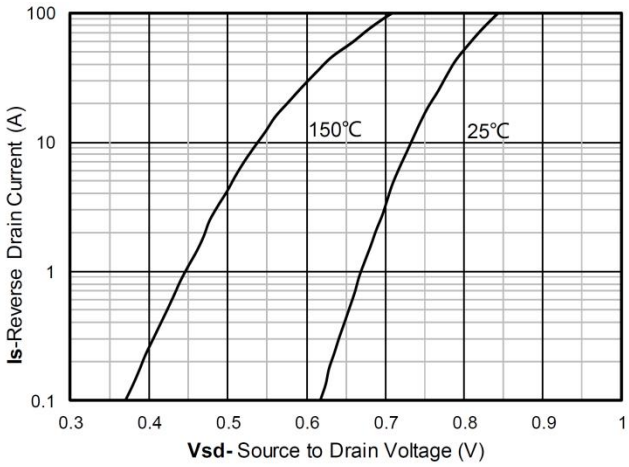
Current dissipation



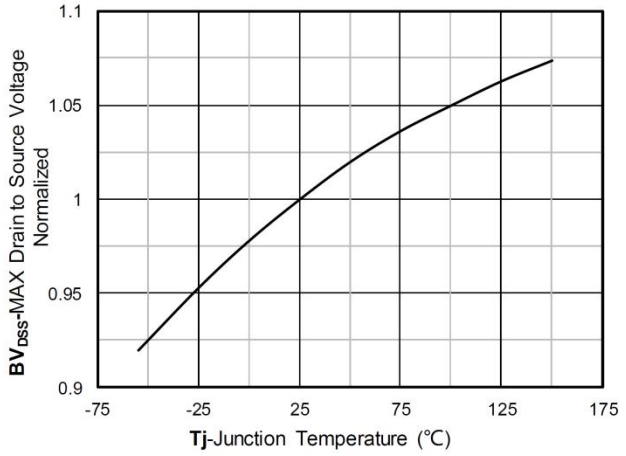
Power dissipation



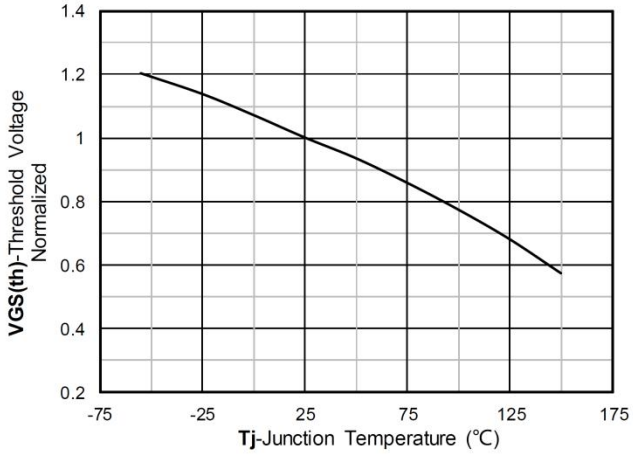
RDS(on) VS Drain Current



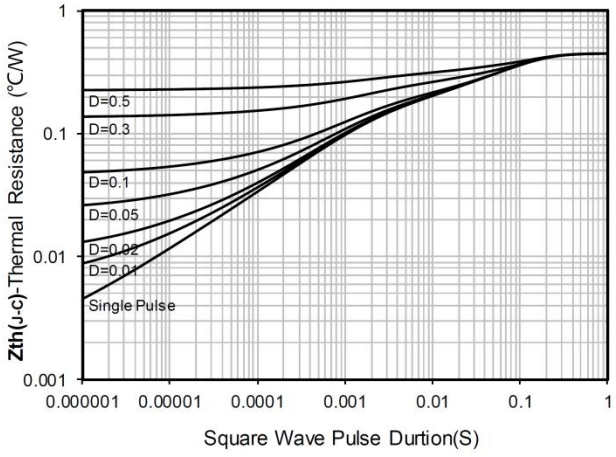
Forward characteristics of reverse diode



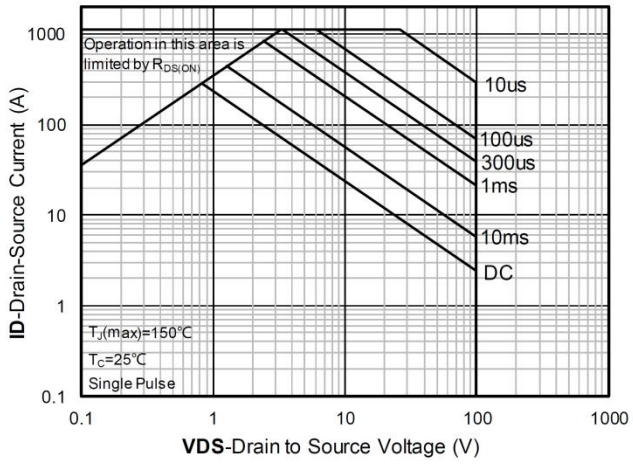
Normalized breakdown voltage



Normalized Threshold voltage



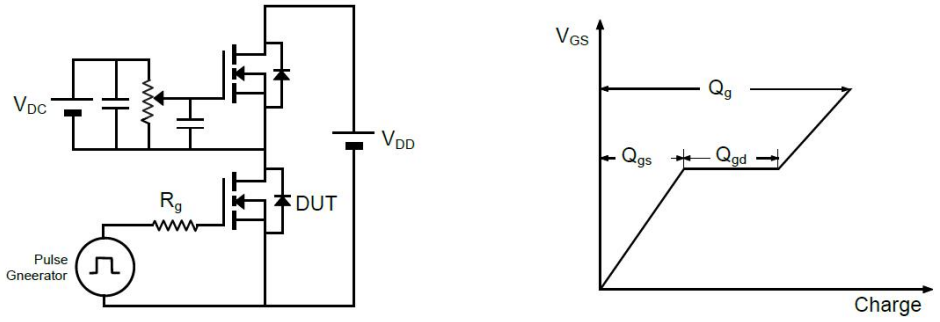
Maximum Transient Thermal Impedance



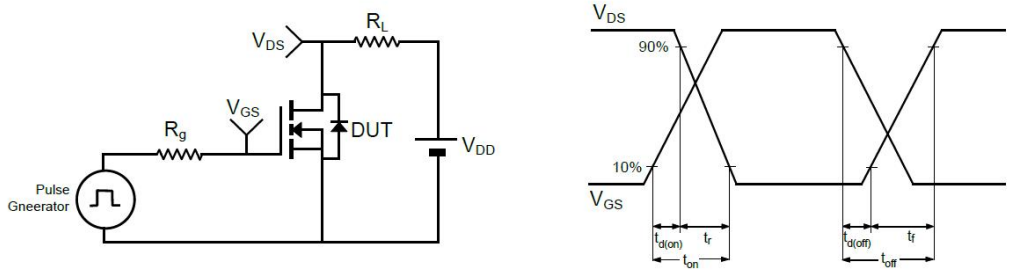
Safe Operation Area

Test Circuit

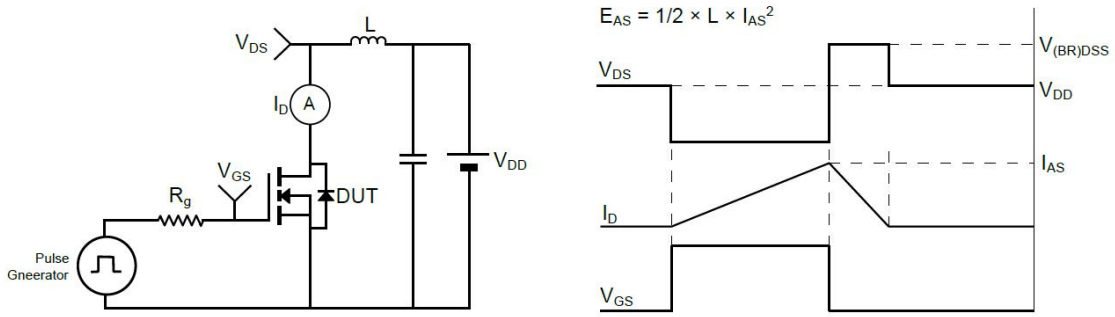
Gate Charge



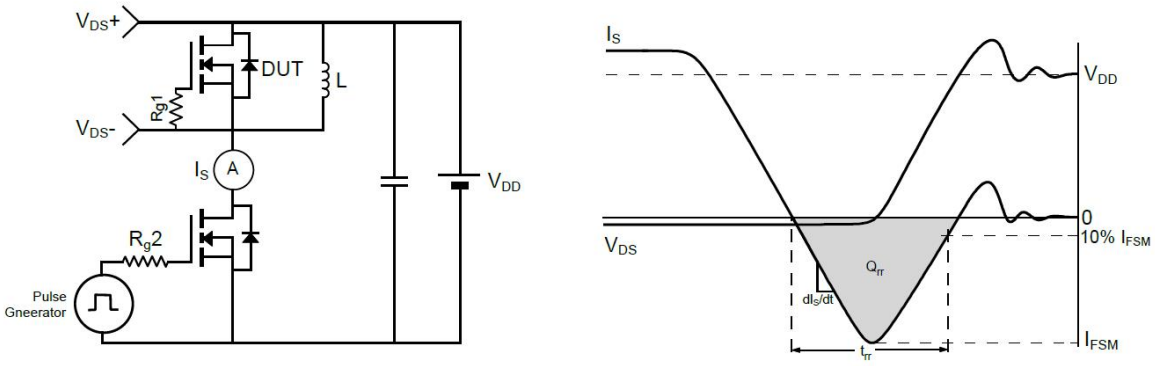
Resistive Load Switching Time



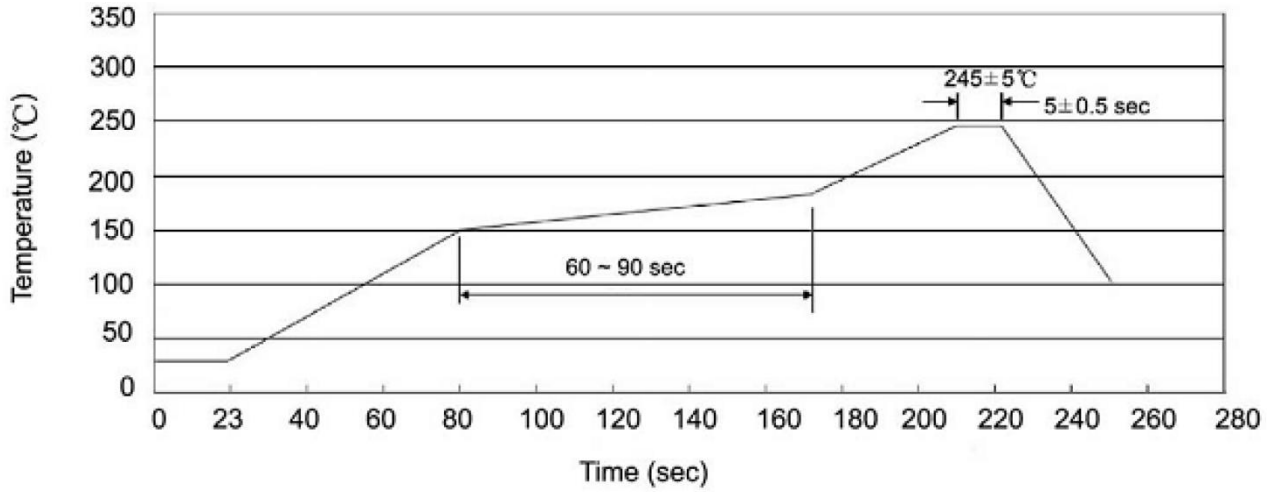
Un-clamped Inductive Load Switching



Drain-Source Body Diode Reverse Recovery



Temperature Profile for IR Reflow Soldering(Pb-Free)



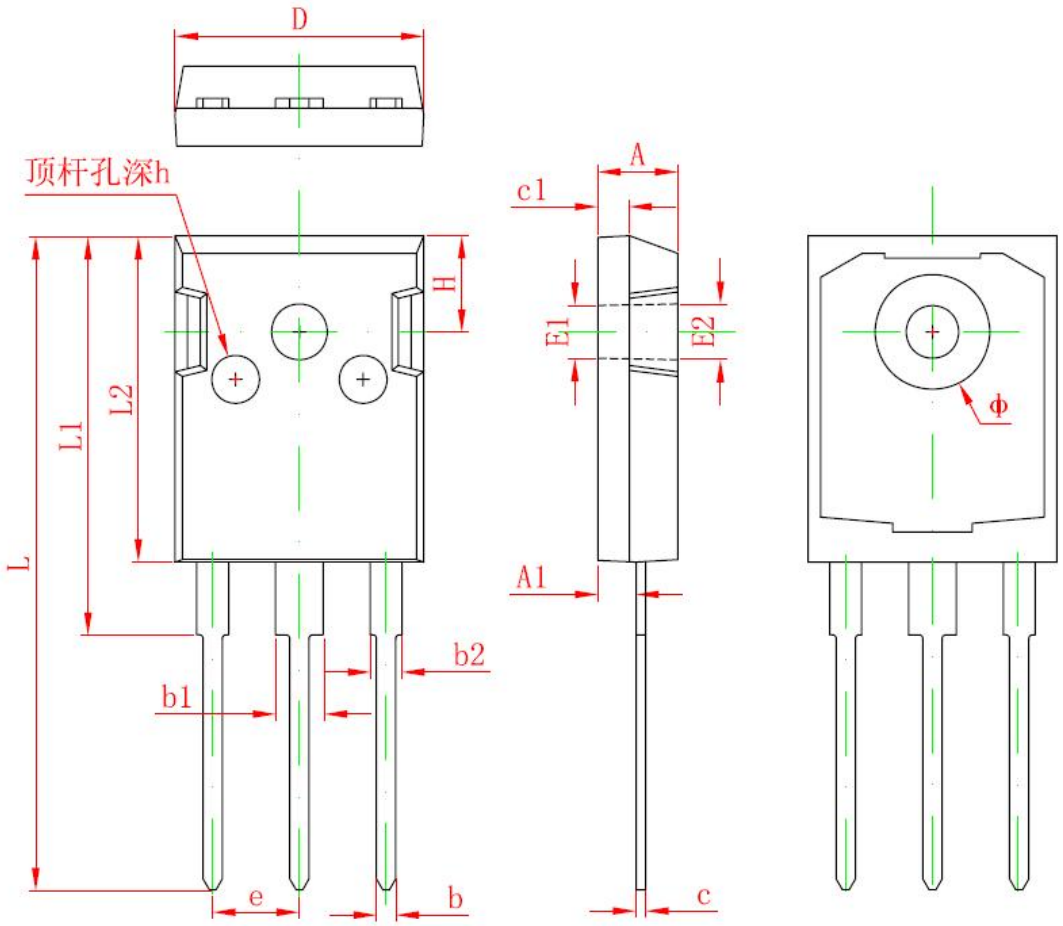
Note:

1. Preheating: 25 ~ 150 ℃, Time: 60 ~ 90 sec.
2. Peak Temp.: 245 ± 5 ℃, Duration: 5 ± 0.5 sec.
3. Cooling Speed: 2 ~ 10 ℃/sec.

Resistance to Soldering Heat Test Conditions

Temp.: 260 ± 5 ℃ Time: 10 ± 1 sec

TO-247 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012