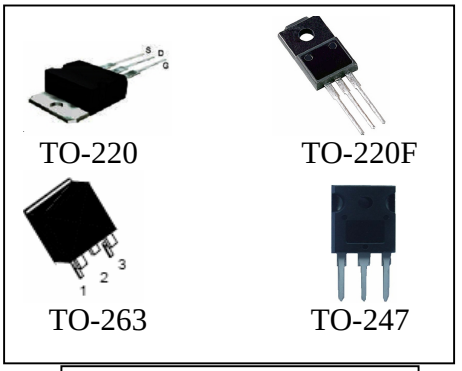
RU1H35Q

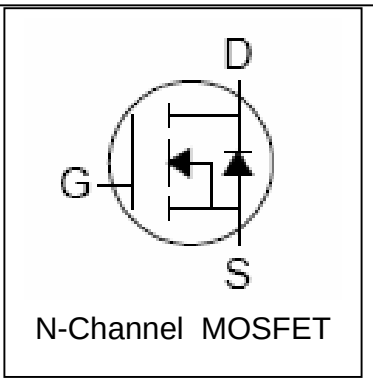
N-Channel Advanced Power MOSFET

Features

- 100V/40A,
  $R_{DS(ON)}$ =21mΩ(tpy.)@V_{GS}=10V
- Super High Dense Cell Design
- 100% avalanche tested
- Lead Free and Green Devices Available
  (RoHS Compliant)

Pin Description





Applications

•Switching application

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		±25	
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 to 175	°C
I_S	Diode Continuous Forward Current	T_C=25°C	40	A
Mounted on Large Heat Sink				
I_{DP}	300μs Pulse Drain Current Tested	T_C=25°C	160①	A
I_D	Continuous Drain Current	T_C=25°C	40②	A
		T_C=100°C	27	
P_D	Maximum Power Dissipation	T_C=25°C	111	W
		T_C=100°C	56	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.35	°C/W
Drain-Source Avalanche Ratings				
E_{AS}③	Avalanche Energy, Single Pulsed		220	mJ

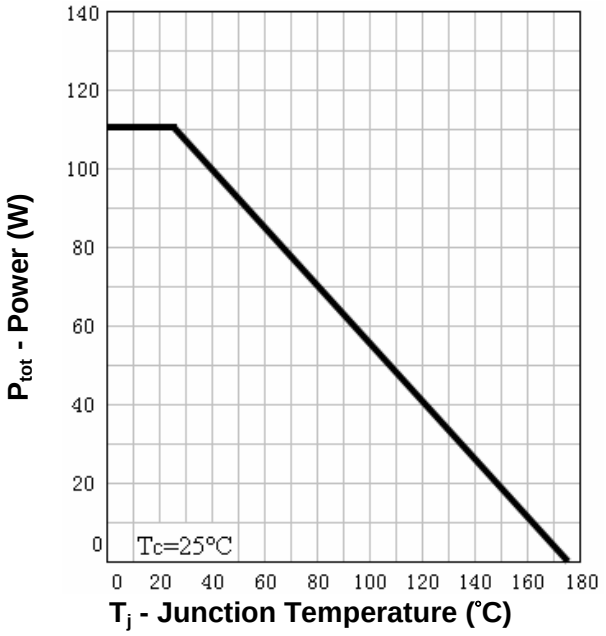
Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU1H35Q			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	100			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 100V, V_{GS}=0V			1	μA
		T_J=85°C			10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	2	3	4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ④	Drain-Source On-state Resistance	V_{GS}= 10V, I_{DS}=16A		21	25	mΩ
Diode Characteristics						
V_{SD} ④	Diode Forward Voltage	I_{SD}=16A, V_{GS}=0V		0.8	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=16A, dI_{SD}/dt=100A/μs		100		ns
Q_{rr}	Reverse Recovery Charge			430		nC
Dynamic Characteristics ⑤						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		2.8		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= 25V, Frequency=1.0MHz		2100		pF
C_{oss}	Output Capacitance			250		
C_{rss}	Reverse Transfer Capacitance			115		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=50V, R_L=30Ω, I_{DS}=16A, V_{GEN}= 10V, R_G=4.7Ω		22		ns
t_r	Turn-on Rise Time			76		
$t_{d(OFF)}$	Turn-off Delay Time			60		
t_f	Turn-off Fall Time			23		
Gate Charge Characteristics ⑤						
Q_g	Total Gate Charge	V_{DS}=80V, V_{GS}= 10V, I_{DS}=16A		44		nC
Q_{gs}	Gate-Source Charge			10		
Q_{gd}	Gate-Drain Charge			21		

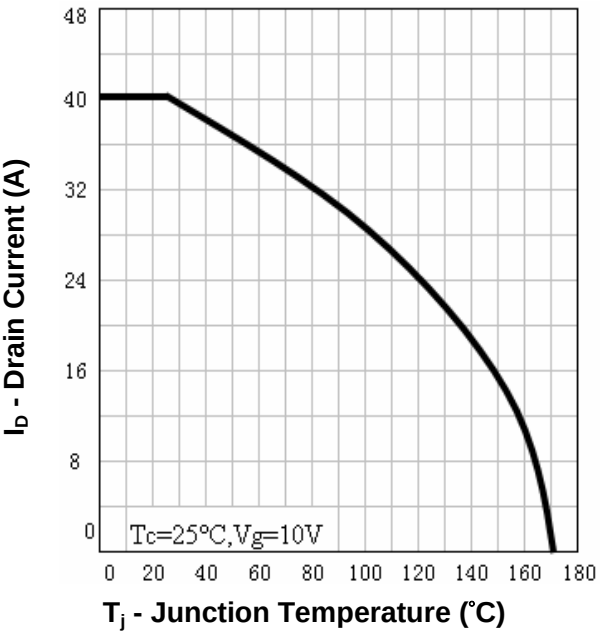
Notes: ①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.
③Limited by T_{Jmax}, I_{AS} =21A, V_{DD} = 48V, R_G = 50Ω , Starting T_J = 25°C.
④Pulse test ; Pulse width≤300μs, duty cycle≤2%.
⑤Guaranteed by design, not subject to production testing.

Typical Characteristics

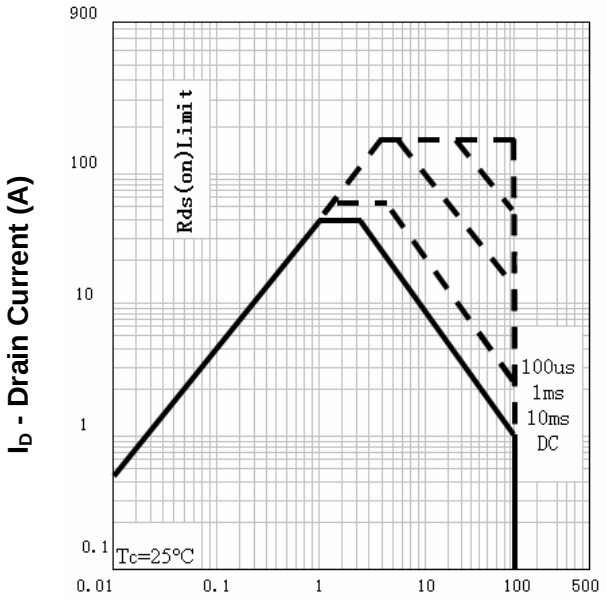
Power Dissipation



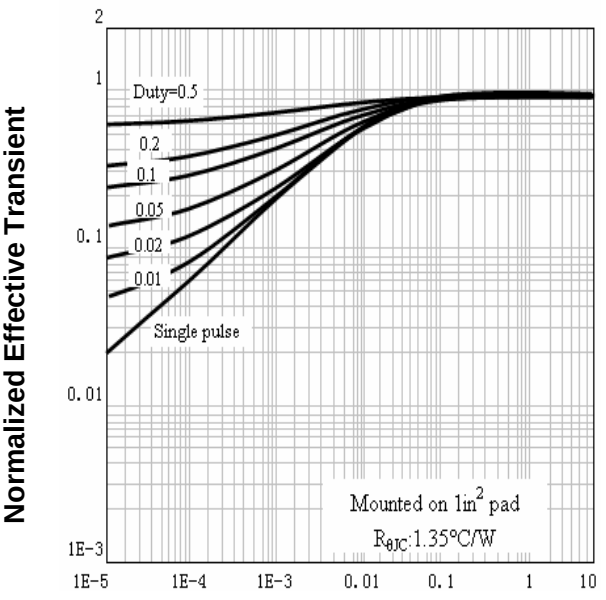
Drain Current



Safe Operation Area

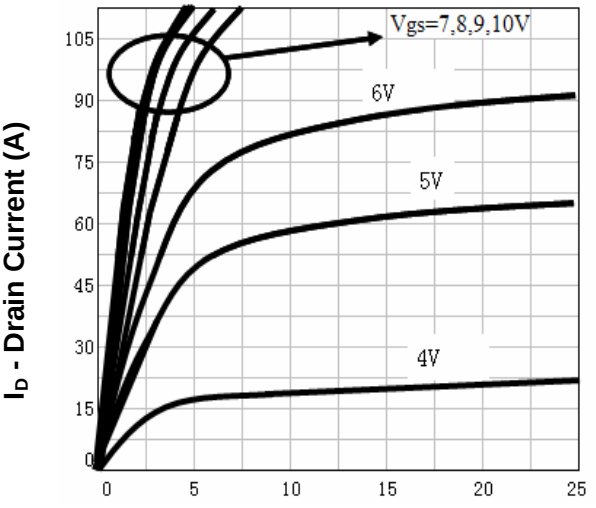


Thermal Transient Impedance



Typical Characteristics

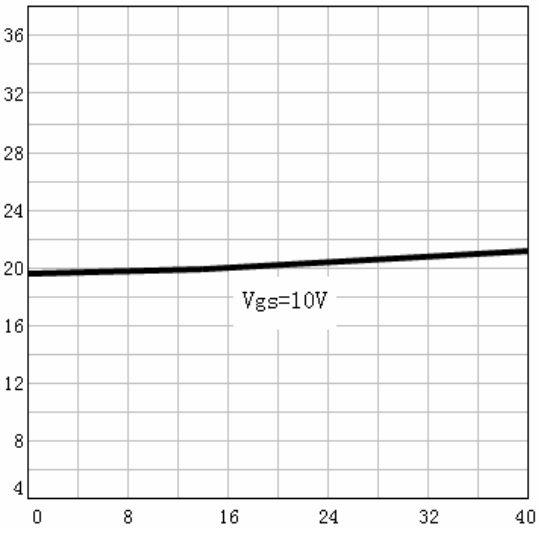
Output Characteristics



I_D - Drain Current (A)

V_{DS} - Drain-Source Voltage (V)

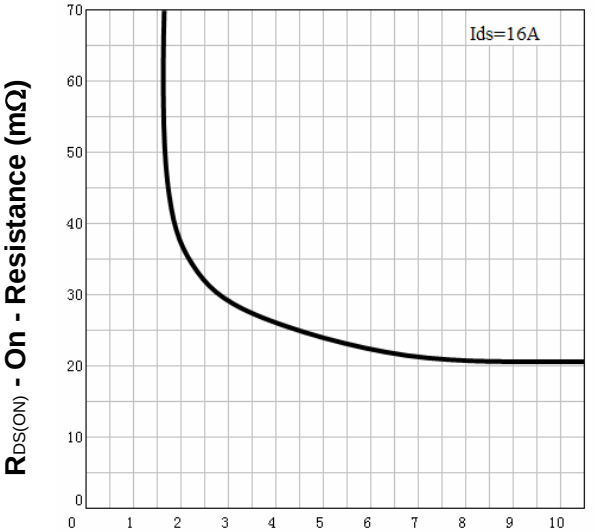
Drain-Source On Resistance



$R_{DS(ON)}$ - On Resistance (mΩ)

I_D - Drain Current (A)

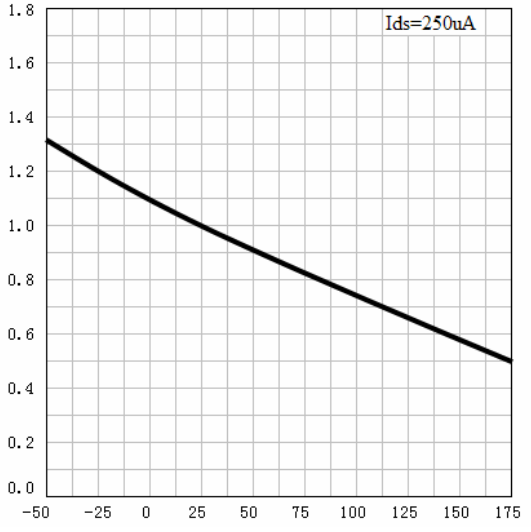
Drain-Source On Resistance



$R_{DS(ON)}$ - On - Resistance (mΩ)

V_{GS} - Gate-Source Voltage (V)

Gate Threshold Voltage

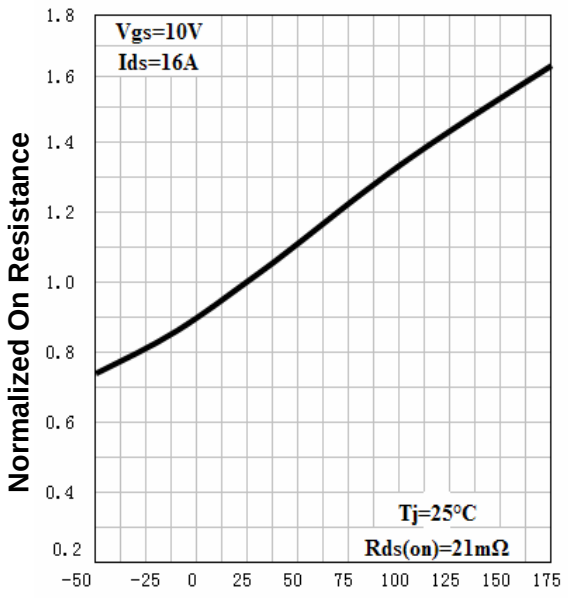


Normalized Threshold Voltage

T_j - Junction Temperature (°C)

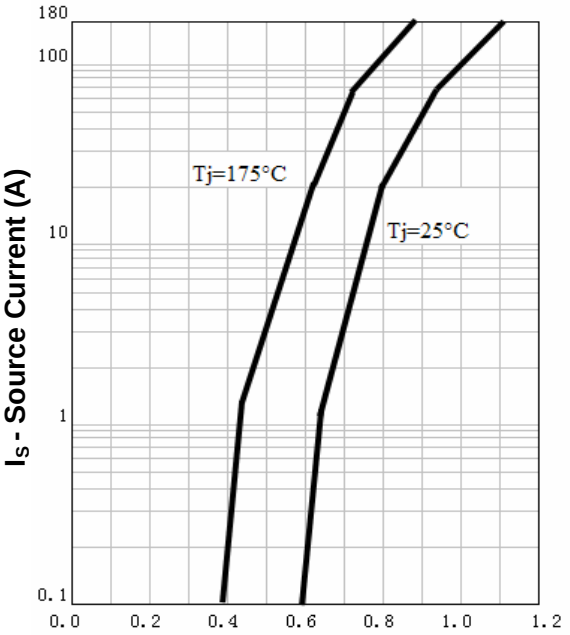
Typical Characteristics

Drain-Source On Resistance



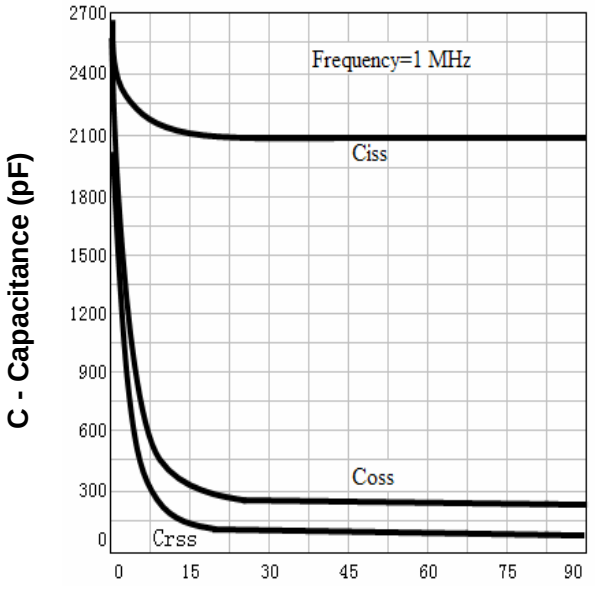
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



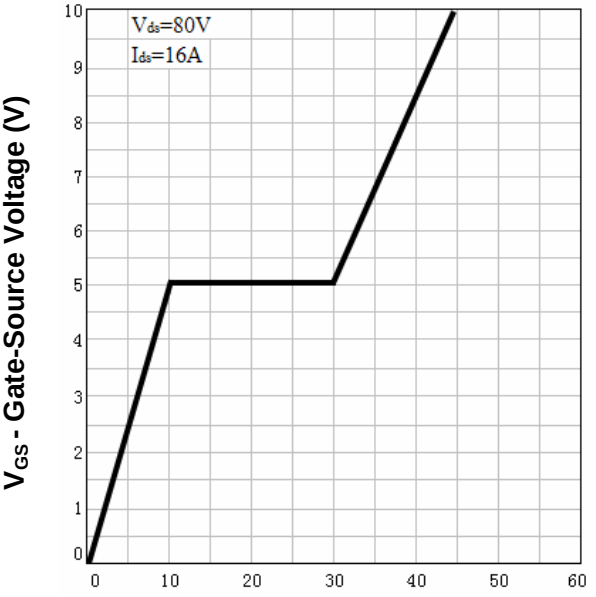
V_{SD} - Source-Drain Voltage (V)

Capacitance



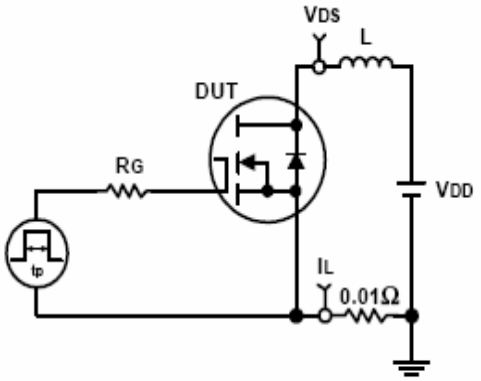
V_{DS} - Drain-Source Voltage (V)

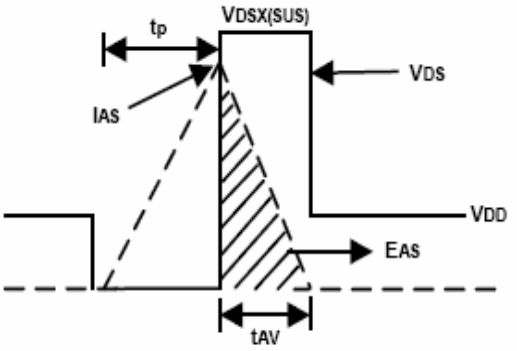
Gate Charge



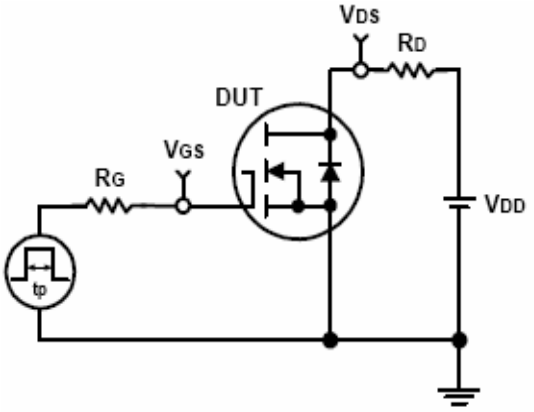
Q_G - Gate Charge (nC)

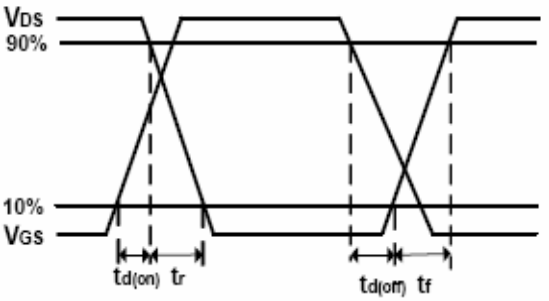
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





Ordering and Marking Information

RU1H35

Package (Available)

Q : TO247

Operating Temperature Range

C : -55 to 175 ºC

Assembly Material

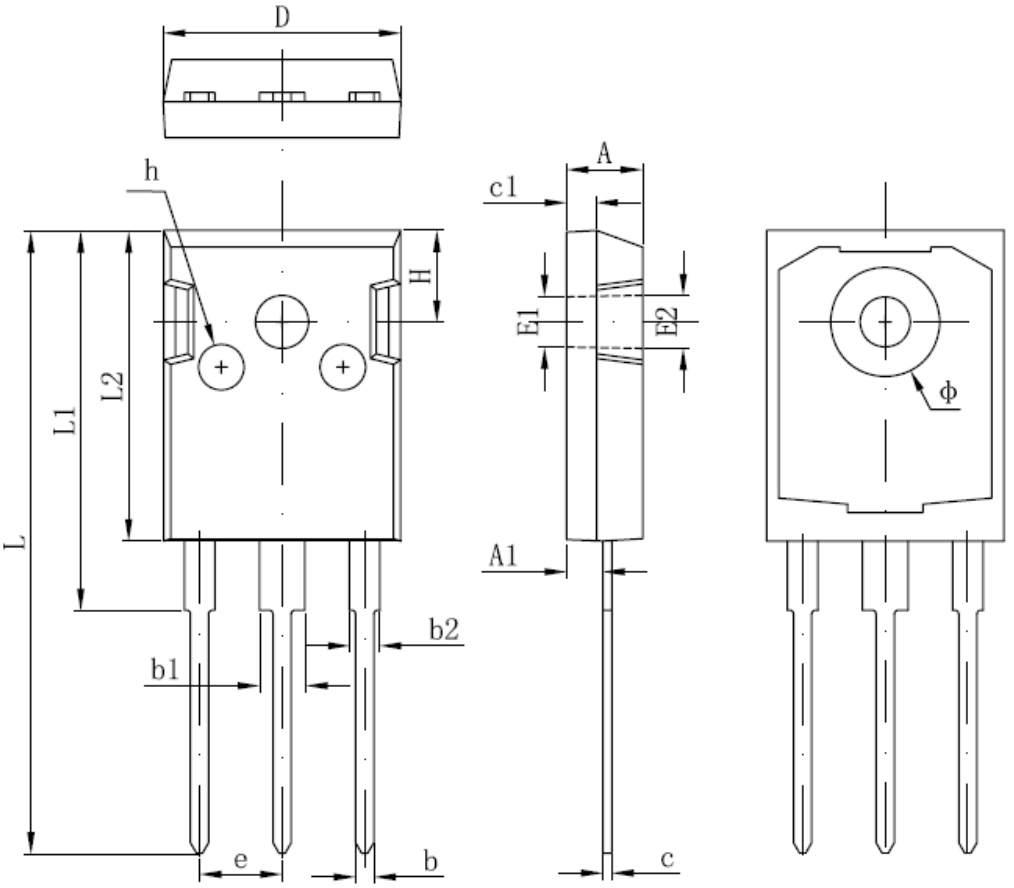
G : Green & Lead Free

Packaging

T : TUBE

Package Information

TO-247



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	4.850	5.150	0,191	0.200	E2	3.600 REF		0.142 REF	
A1	2.200	2.600	0.087	0.102	L	40.900	41.300	1.610	1.626
B	1.000	1.400	0.039	0.055	L1	24.800	25.100	0.976	0.988
b1	2.800	3.200	0.110	0.126	L2	20.300	20.600	0.799	0.811
b2	1.800	2.200	0.071	0.087	Φ	7.100	7.300	0.280	0.287
c	0.500	0.700	0.020	0.028	e	5.450 TYP		0.215 TYP	
c1	1.900	2.100	0.075	0.083	H	5.980 REF.		0.235 REF.	
D	15.450	15.750	0.608	0.620	h	0.000	0.300	0.000	0.012
E1	3.500 REF.		0.138 REF.						

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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