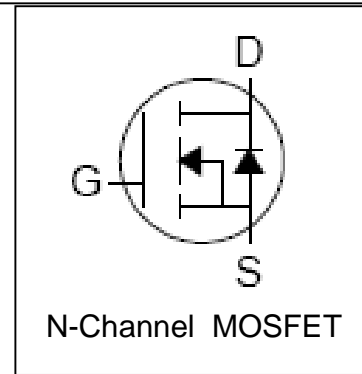
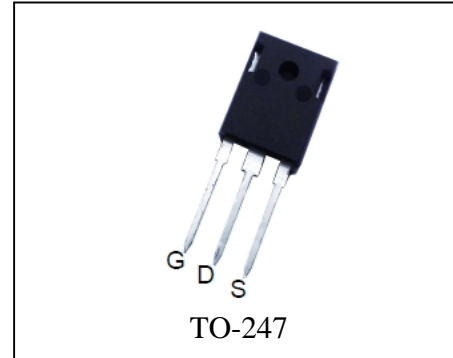


Features

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

Pin Description



Applications

- Switching application

Absolute Maximum Ratings

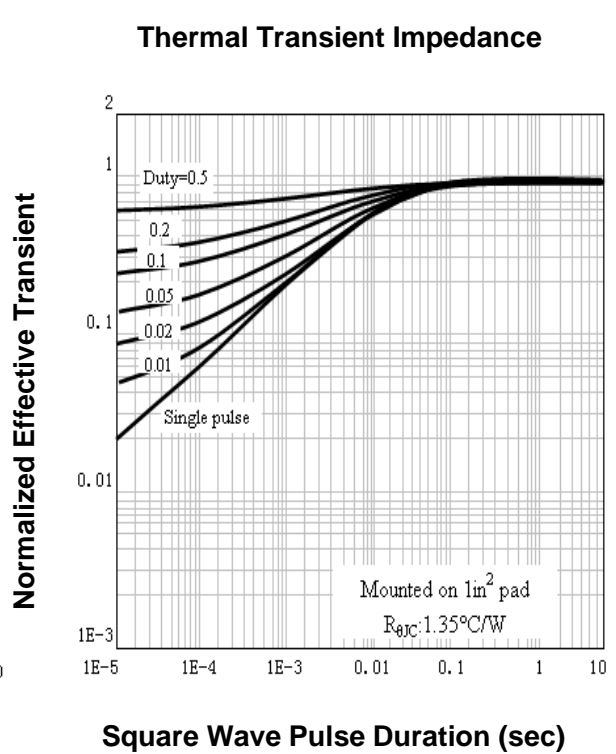
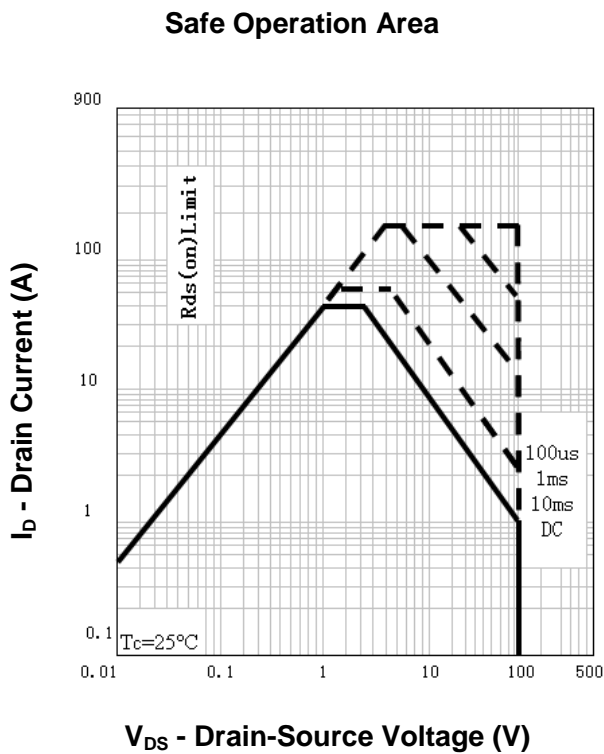
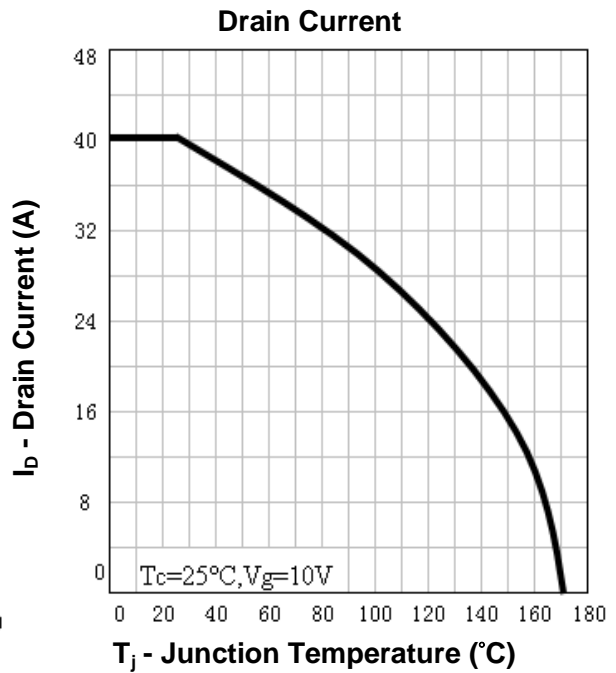
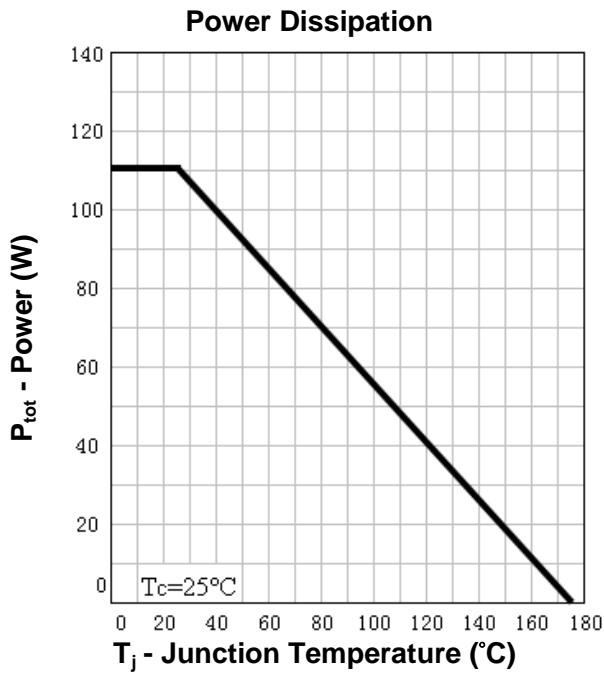
Symbol	Parameter	Rating	Unit
Common Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	100	V
V_{GSS}	Gate-Source Voltage	± 25	
T_J	Maximum Junction Temperature	175	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
I_S	Diode Continuous Forward Current	$T_C = 25^\circ C$ 40	A
Mounted on Large Heat Sink			
I_{DP}	300 μs Pulse Drain Current Tested	$T_C = 25^\circ C$ 160 ^①	A
I_D	Continuous Drain Current ($V_{GS} = 10V$)	$T_C = 25^\circ C$ 40 ^②	A
		$T_C = 100^\circ C$ 27	
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$ 111	W
		$T_C = 100^\circ C$ 56	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.35	$^\circ C/W$
Drain-Source Avalanche Ratings			
E_{AS} ^③	Avalanche Energy, Single Pulsed	220	mJ

Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU1H35Q			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	100			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			1 10	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2	3	4	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(4)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=16A$		21	25	m Ω
Diode Characteristics						
$V_{SD}^{(4)}$	Diode Forward Voltage	$I_{SD}=16A, V_{GS}=0V$		0.8	1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=16A, di_{SD}/dt=100A/\mu s$		100		ns
Q_{rr}	Reverse Recovery Charge			430		nC
Dynamic Characteristics ⁽⁵⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		2.8		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=25V,$ Frequency=1.0MHz		2100		pF
C_{oss}	Output Capacitance			250		
C_{riss}	Reverse Transfer Capacitance			115		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=50V, R_L=30\Omega,$ $I_{DS}=16A, V_{GEN}=10V,$ $R_G=4.7\Omega$		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		

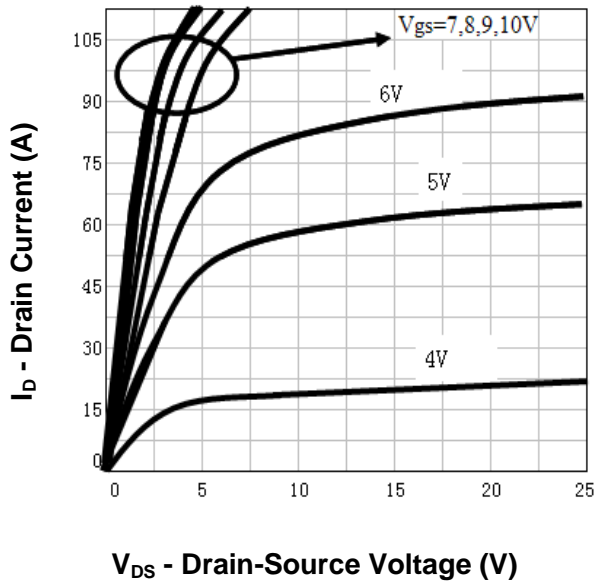
- Notes: ① Pulse width limited by safe operating area.
 ② Calculated continuous current based on maximum allowable junction temperature.
 ③ Limited by $T_{Jmax}, I_{AS}=21A, V_{DD}=48V, R_G=50\Omega$, Starting $T_J=25^\circ\text{C}$.
 ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.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

Typical Characteristics

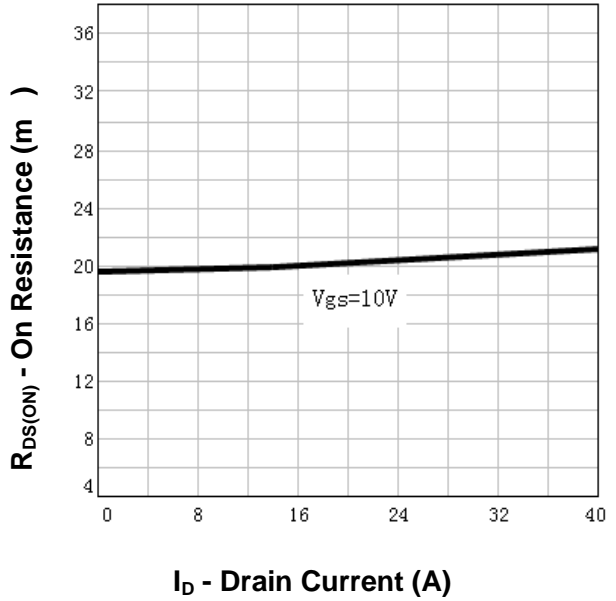


Typical Characteristics

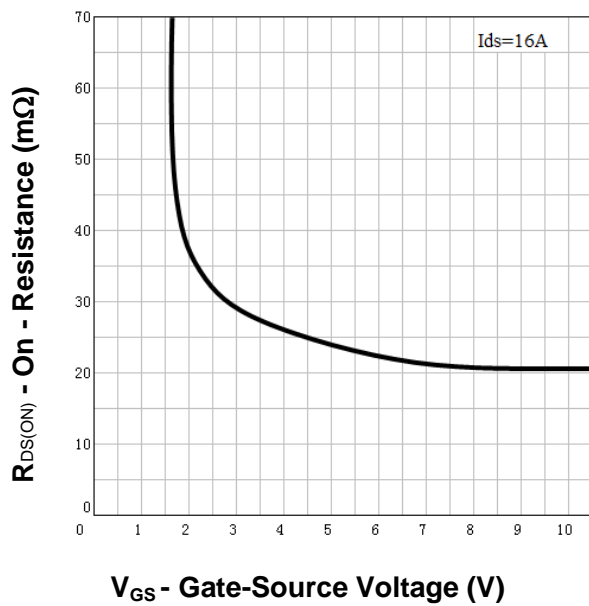
Output Characteristics



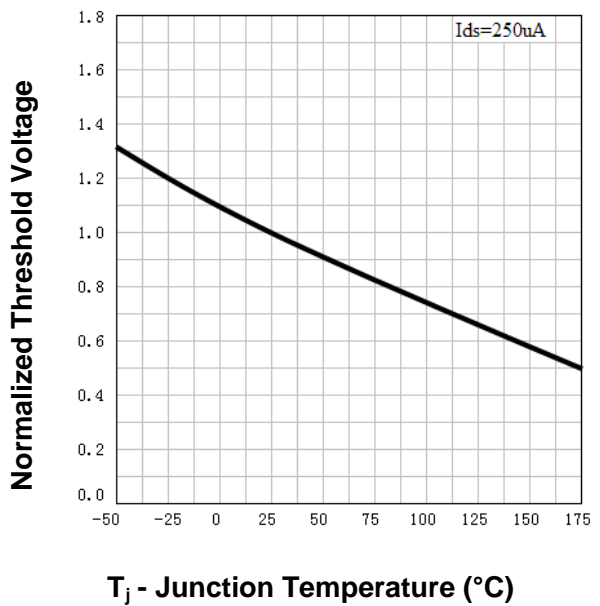
Drain-Source On Resistance



Drain-Source On Resistance

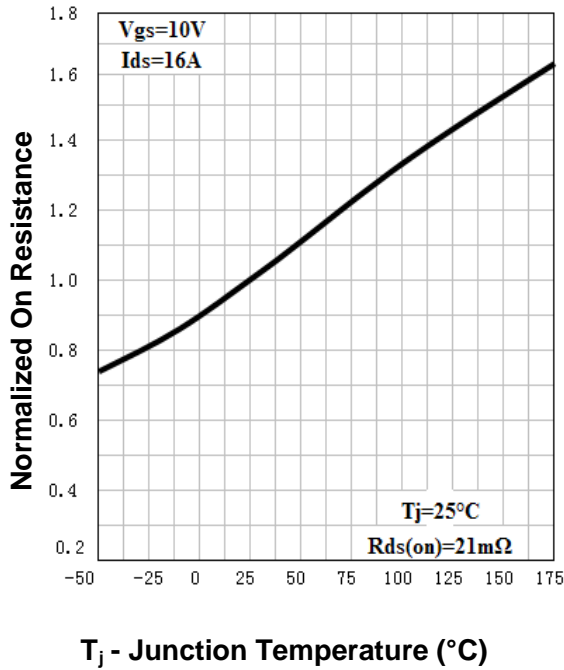


Gate Threshold Voltage

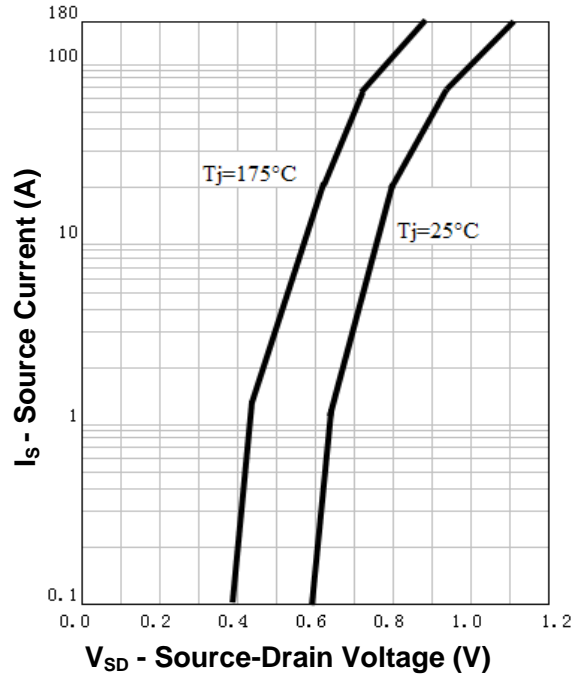


Typical Characteristics

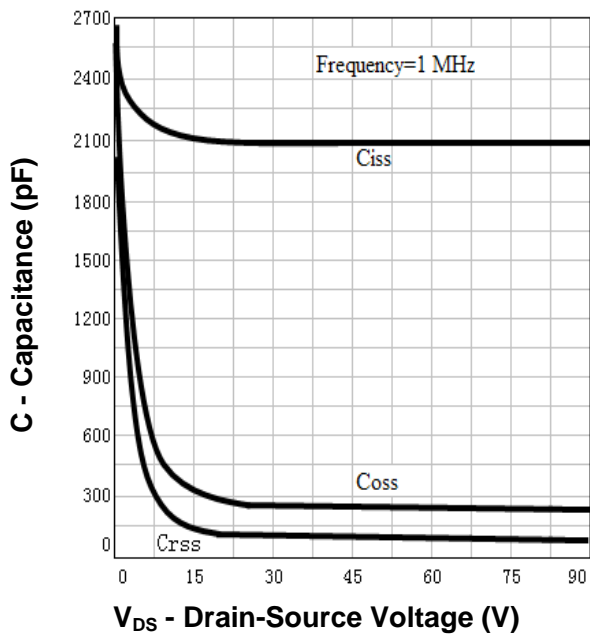
Drain-Source On Resistance



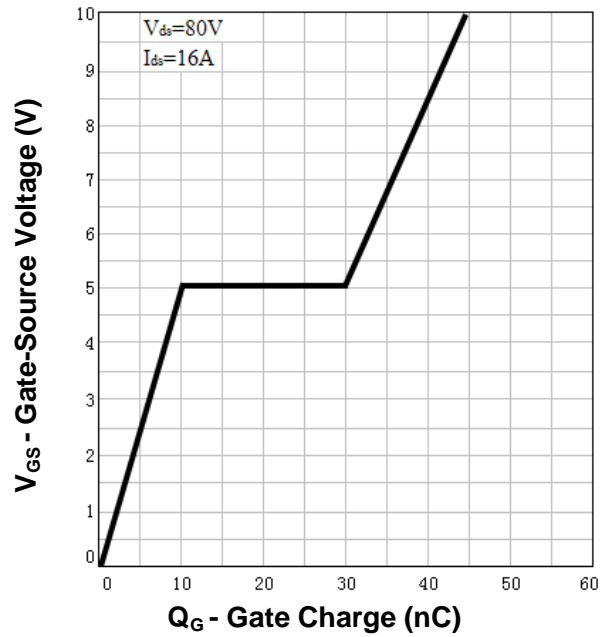
Source-Drain Diode Forward



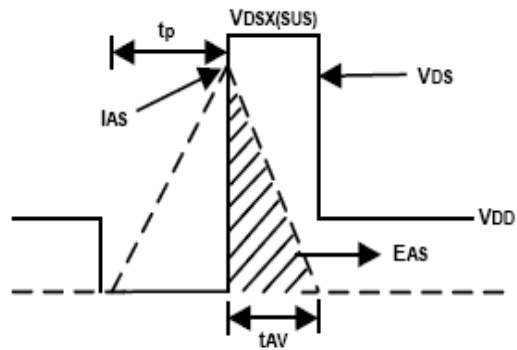
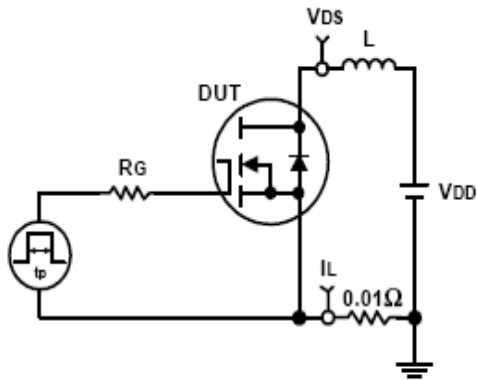
Capacitance



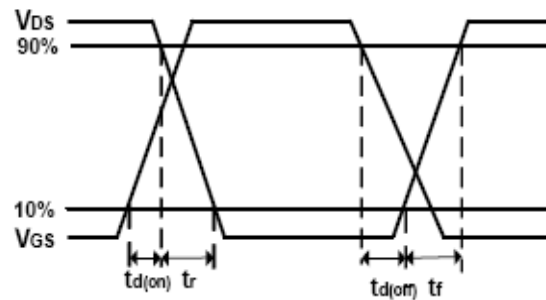
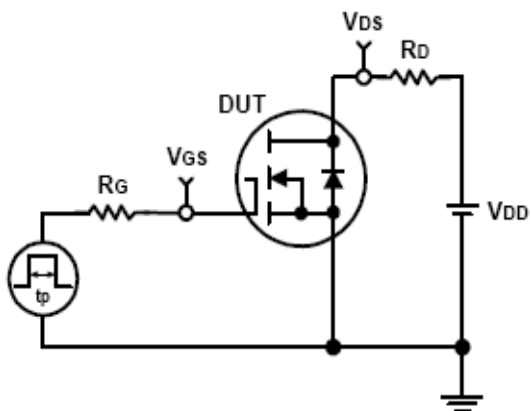
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

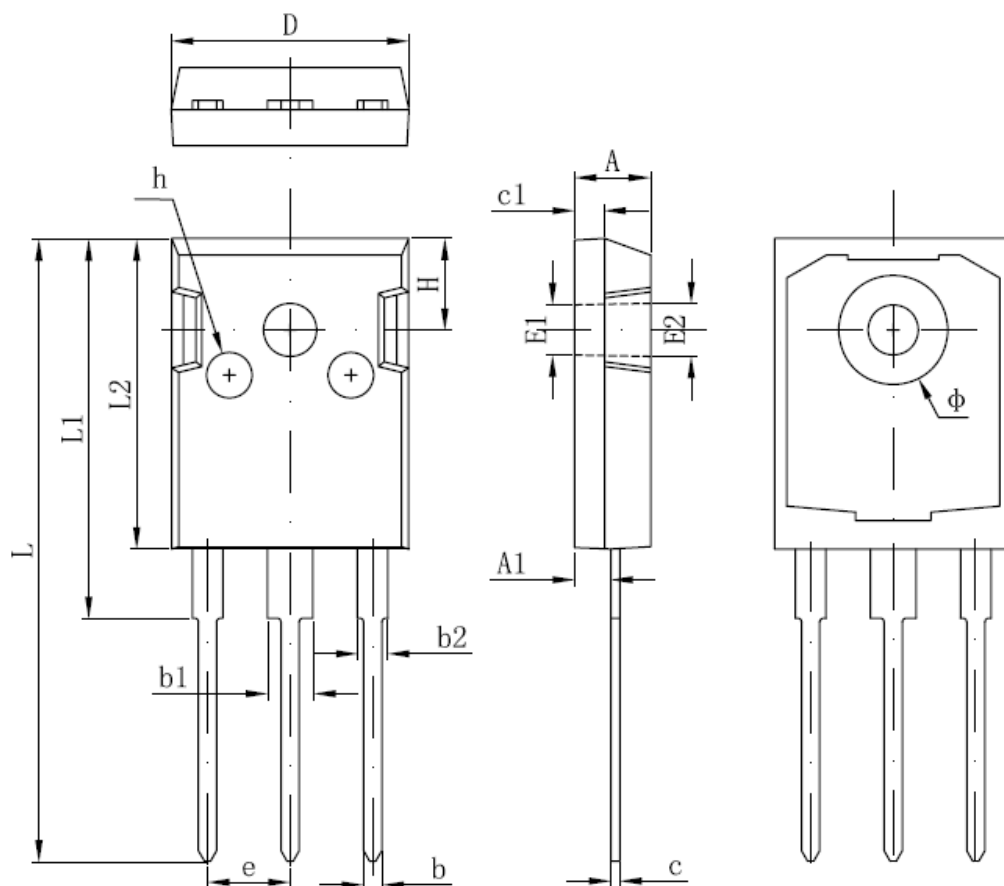


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU1H35Q	RU1H35Q	TO-247	Tube	30	-	-

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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