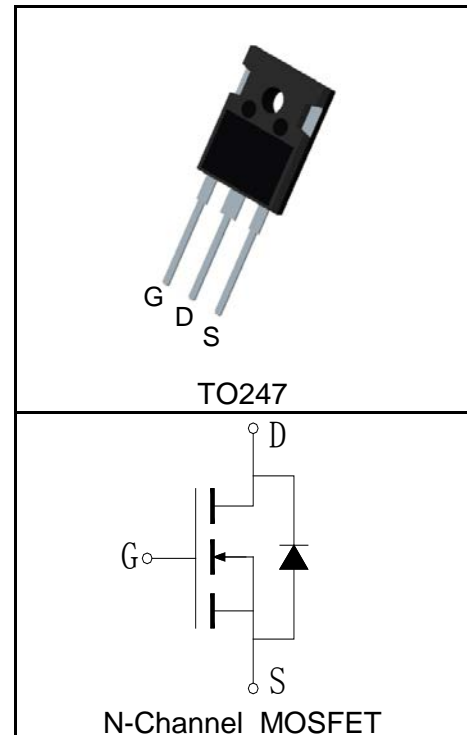


Features

- 100V/130A,
RDS (ON) = 7mΩ(Typ.)@VGS=10V
- Super High Dense Cell Design
- Ultra Low On-Resistance
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description

Applications

- High Efficiency Synchronous Rectification in SMPS
- High Speed Power Switching

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings (T _C =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 130	A
Mounted on Large Heat Sink			
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C 520	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C 130	A
		T _C =100°C 92	
P _D	Maximum Power Dissipation	T _C =25°C 312	W
		T _C =100°C 156	
R _{θJC}	Thermal Resistance-Junction to Case	0.48	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient	50	°C/W
Drain-Source Avalanche Ratings			
E _{AS} ^③	Avalanche Energy, Single Pulsed	552	mJ

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

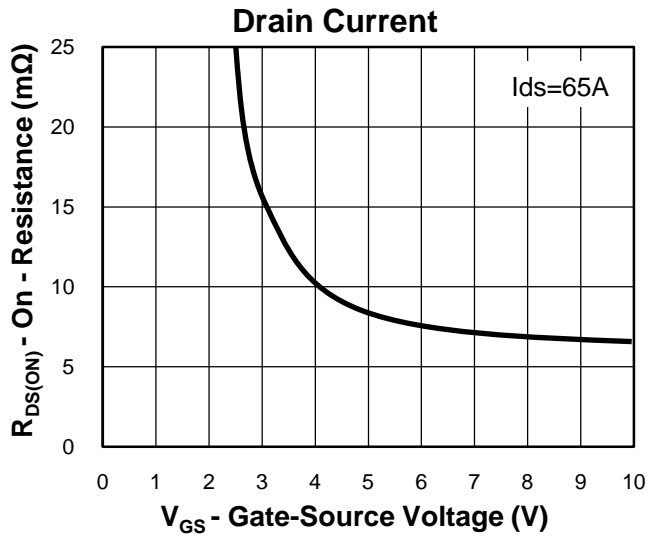
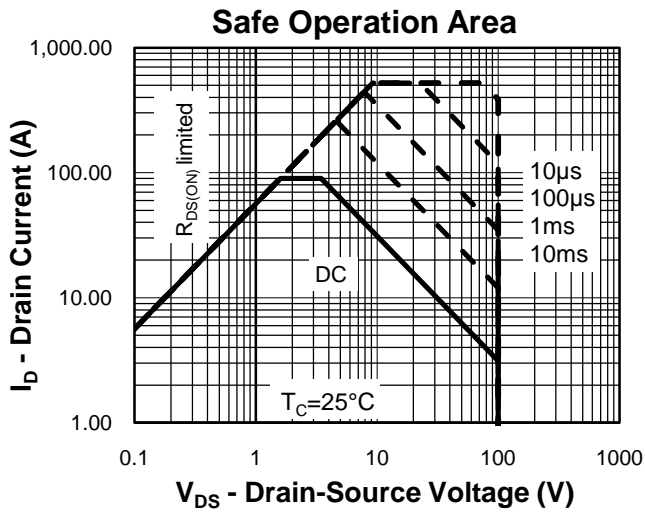
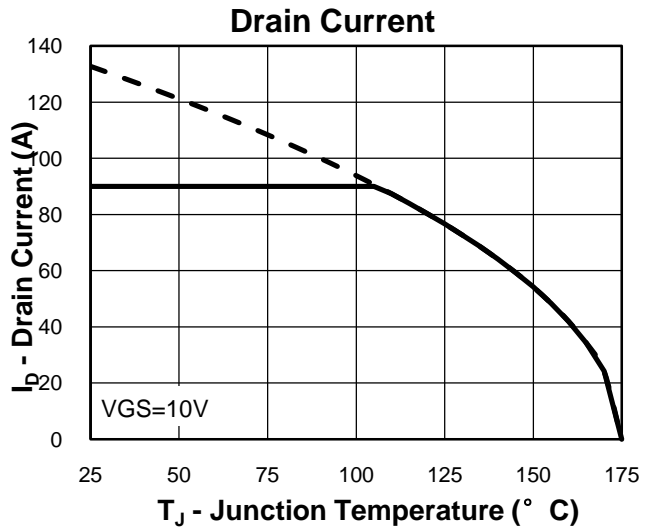
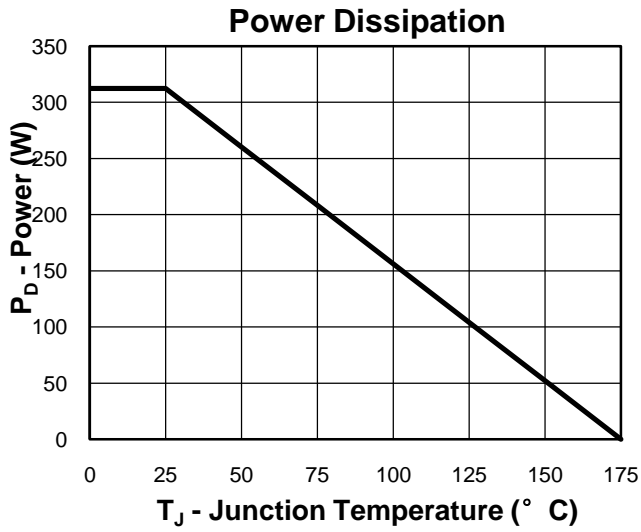
Symbol	Parameter	Test Condition	RU1H130Q			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	100			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$			1	μA
		$T_J=125^\circ C$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2		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	$V_{GS}=10V, I_{DS}=65A$		7	9	m Ω
Diode Characteristics						
$V_{SD}^{(4)}$	Diode Forward Voltage	$I_{SD}=65A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=65A, di_{SD}/dt=100A/\mu s$		42		ns
Q_{rr}	Reverse Recovery Charge			64		μC
Dynamic Characteristics ⁽⁵⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		1		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=50V,$ Frequency=1.0MHz		6800		pF
C_{oss}	Output Capacitance			630		
C_{riss}	Reverse Transfer Capacitance			350		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=50V, R_L=1\Omega,$ $I_{DS}=65A, V_{GEN}=10V,$ $R_G=5\Omega$		22		ns
t_r	Turn-on Rise Time			86		
$t_{d(OFF)}$	Turn-off Delay Time			72		
t_f	Turn-off Fall Time			66		
Gate Charge Characteristics ⁽⁵⁾						
Q_g	Total Gate Charge	$V_{DS}=80V, V_{GS}=10V,$ $I_{DS}=65A$		130		nC
Q_{gs}	Gate-Source Charge			32		
Q_{gd}	Gate-Drain Charge			55		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 90A.
 - ③ Limited by T_{Jmax} , $I_{AS}=47A$, $V_{DD}=48V$, $R_G=50\Omega$, Starting $T_J=25^\circ C$.
 - ④ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

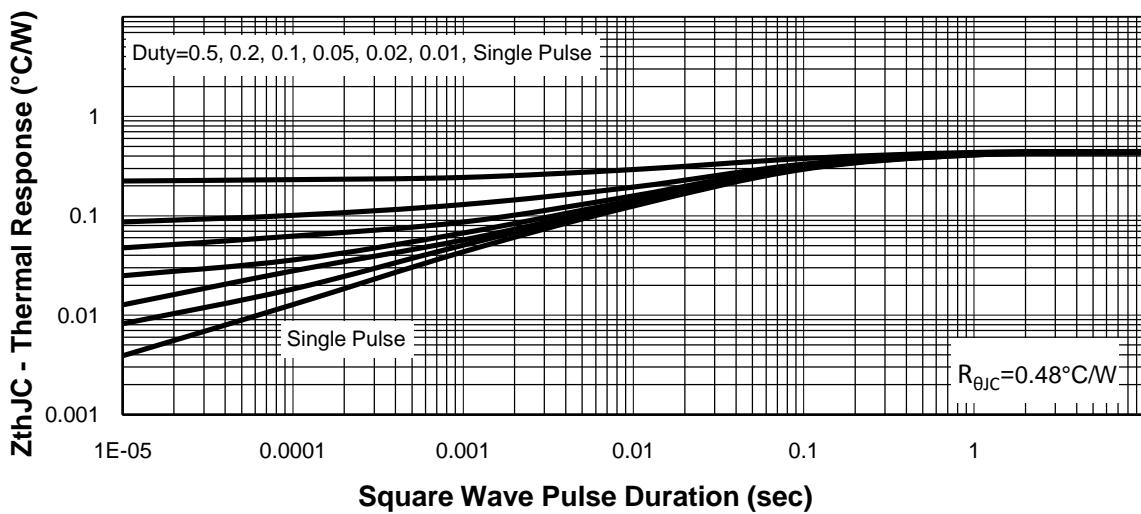
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU1H130Q	RU1H130Q	TO247	Tube	30	-	-

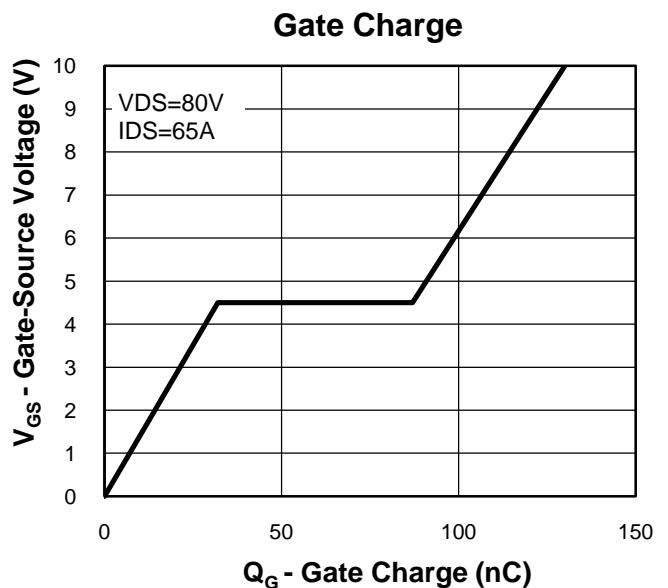
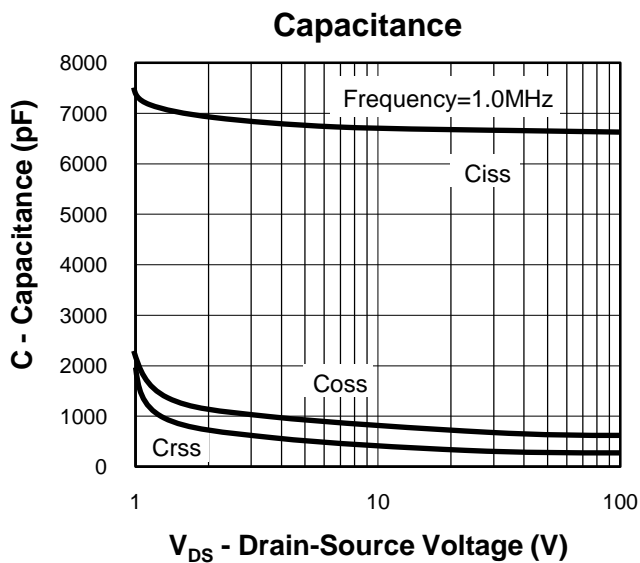
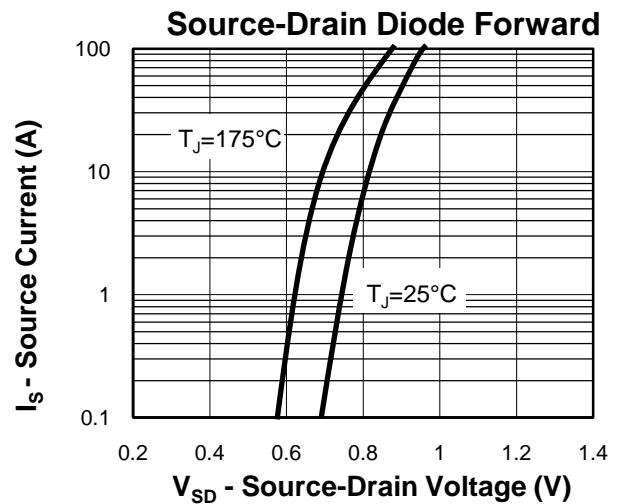
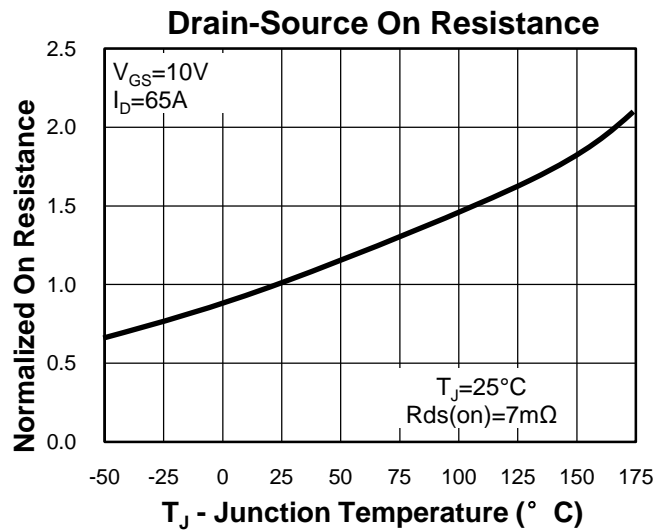
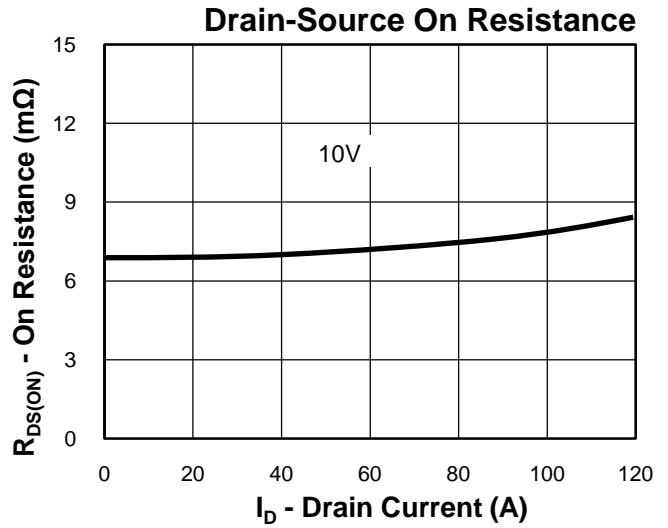
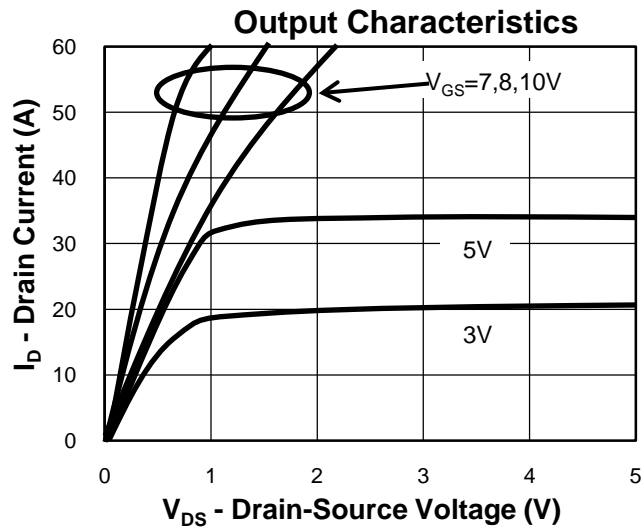
Typical Characteristics



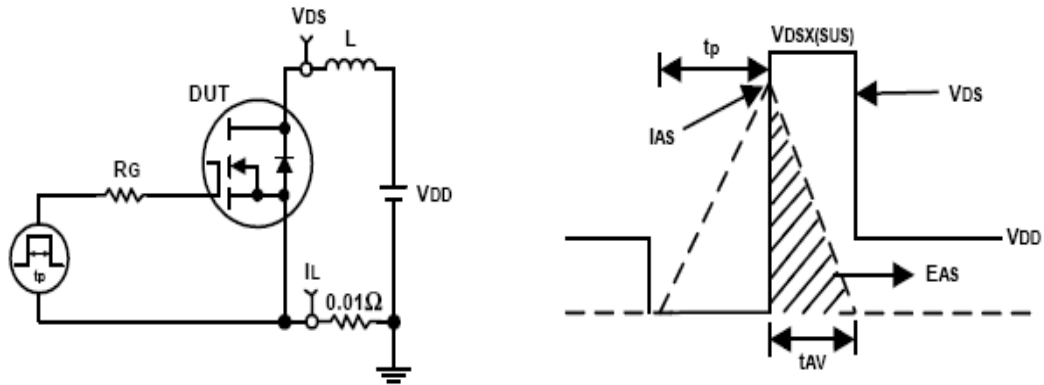
Thermal Transient Impedance



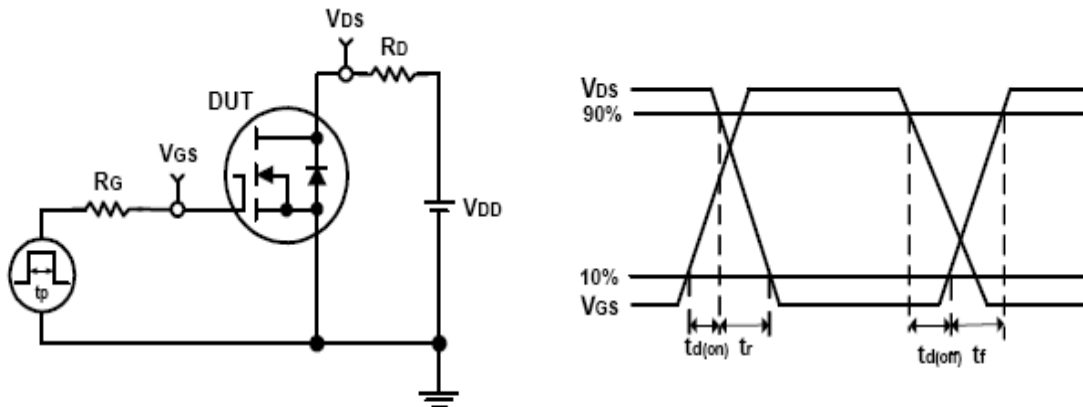
Typical Characteristics



Avalanche Test Circuit and Waveforms

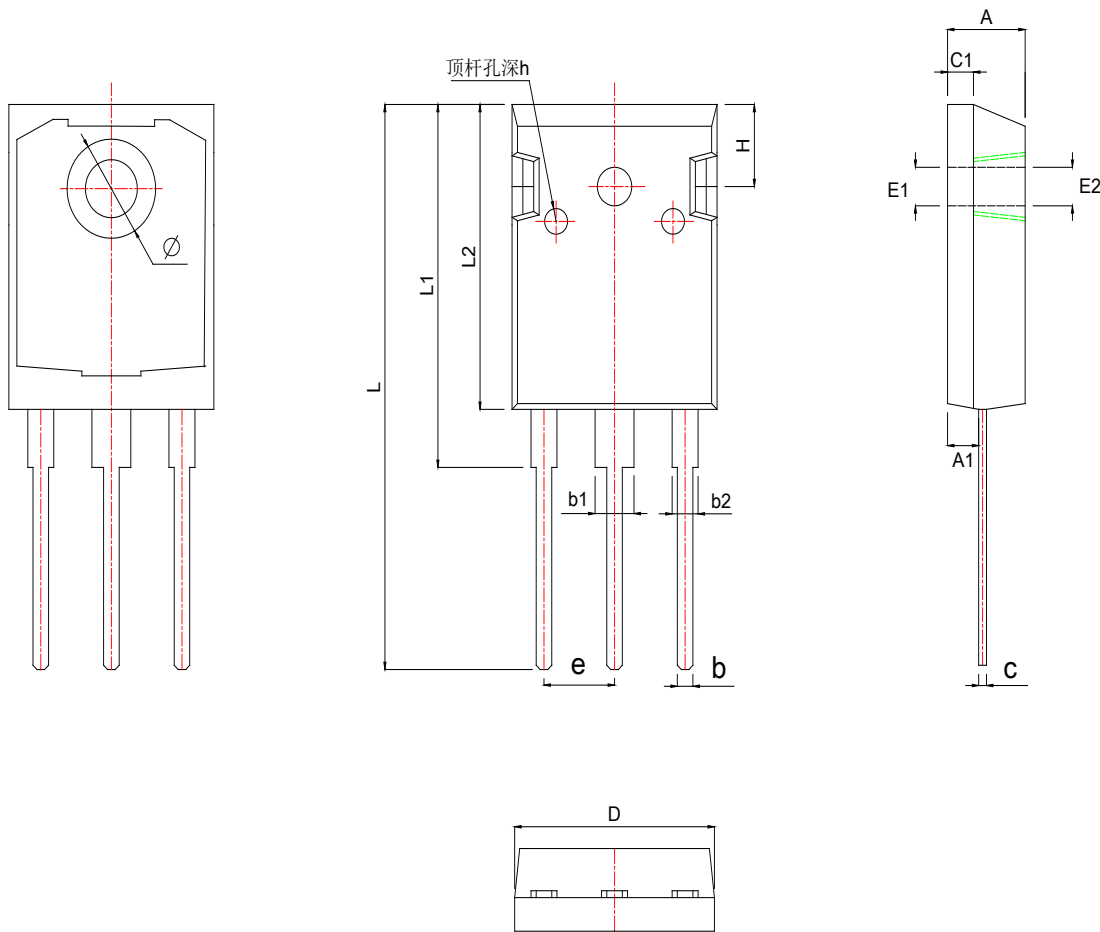


Switching Time Test Circuit and Waveforms



Package Information

TO247



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.850	5.000	5.150	0.191	0.197	0.203
A1	2.200	2.400	2.600	0.087	0.094	0.102
b	1.000	1.200	1.400	0.039	0.047	0.055
b1	2.800	3.000	3.200	0.110	0.118	0.126
b2	1.800	2.000	2.200	0.071	0.079	0.087
c	0.500	0.600	0.700	0.020	0.024	0.028
c1	1.900	2.000	2.100	0.075	0.079	0.083
D	15.450	15.600	15.750	0.608	0.614	0.620
E1	3.500REF			0.138REF		
E2	3.600REF			0.142REF		
L	40.900	41.100	41.300	1.610	1.618	1.626
L1	24.800	24.950	25.100	0.976	0.982	0.988
L2	20.300	20.450	20.600	0.799	0.805	0.811
Φ	7.10	7.20	7.30	0.280	0.283	0.287
e	5.450TYP			0.215TYP		
H	5.980REF			0.235REF		
h	0.000	0.150	0.300	0.000	0.006	0.012

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