RU75N08S

N-Channel Advanced Power MOSFET

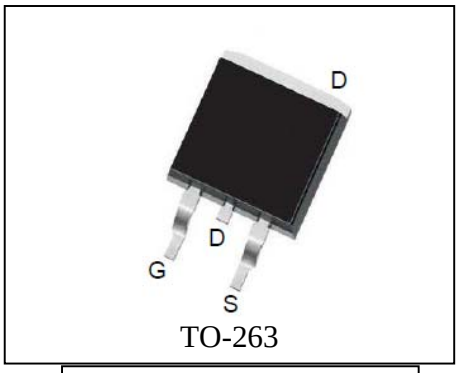
Features

- 75V/80A,
  $R_{DS(ON)}$=8mΩ (typ.) @V_{GS}=10V
- Ultra Low On-Resistance
- Exceptional dv/dt capability
- Fast Switching and Fully Avalanche Rated
- 100% avalanche tested
- 175°C Operating Temperature
- Lead Free and Green Available

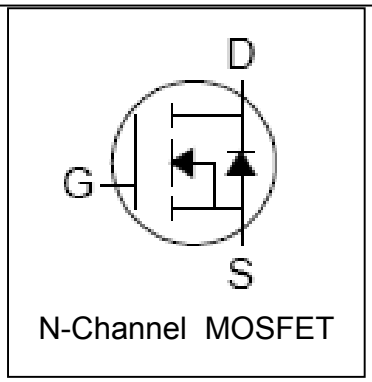
Applications

- Switching Application Systems

Pin Description



TO-263



N-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		75	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	80①	A
Mounted on Large Heat Sink				
I_{DP}	300μs Pulse Drain Current Tested	T_C=25°C	320②	A
I_D	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	80①	A
		T_C=100°C	76	
P_D	Maximum Power Dissipation	T_C=25°C	176	W
		T_C=100°C	88	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.85	°C/W
Drain-Source Avalanche Ratings				
E_{AS}③	Avalanche Energy, Single Pulsed		841	mJ

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

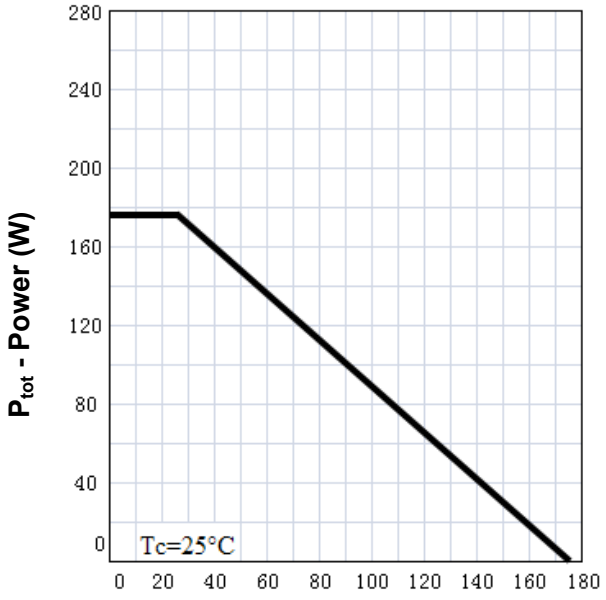
Symbol	Parameter	Test Condition	RU75N08S			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	75			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 75V, V_{GS}=0V			1	μA
		T_J=85°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, 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}=40A		8	11	mΩ
Diode Characteristics						
V_{SD} ④	Diode Forward Voltage	I_{SD}=20 A, V_{GS}=0V			1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=40A, dI_{SD}/dt=100A/μs		50		ns
q_{rr}	Reverse Recovery Charge			110		nC
Dynamic Characteristics ⑤						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.4		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= 30V, Frequency=1.0MHz		3400		pF
C_{oss}	Output Capacitance			450		
C_{rss}	Reverse Transfer Capacitance			170		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=35V, R_L=35Ω, I_{DS}= 1A, V_{GEN}= 10V, R_G=7Ω		22		ns
t_r	Turn-on Rise Time			11		
$t_{d(OFF)}$	Turn-off Delay Time			70		
t_f	Turn-off Fall Time			62		
Gate Charge Characteristics ⑤						
Q_g	Total Gate Charge	V_{DS}=60V, V_{GS}= 10V, I_{DS}=80A		75		nC
Q_{gs}	Gate-Source Charge			18		
Q_{gd}	Gate-Drain Charge			25		

Notes:
①Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A.
②Pulse width limited by safe operating area.
③Limited by T_{Jmax}, I_{AS} =58A, 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.

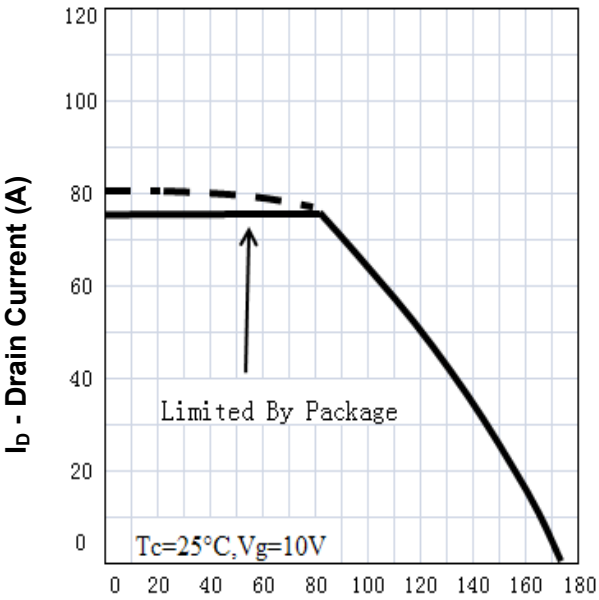
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Typical Characteristics

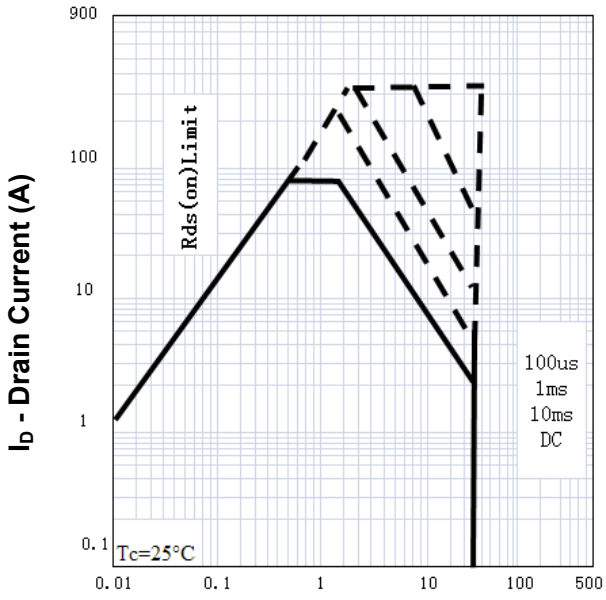
Power Dissipation



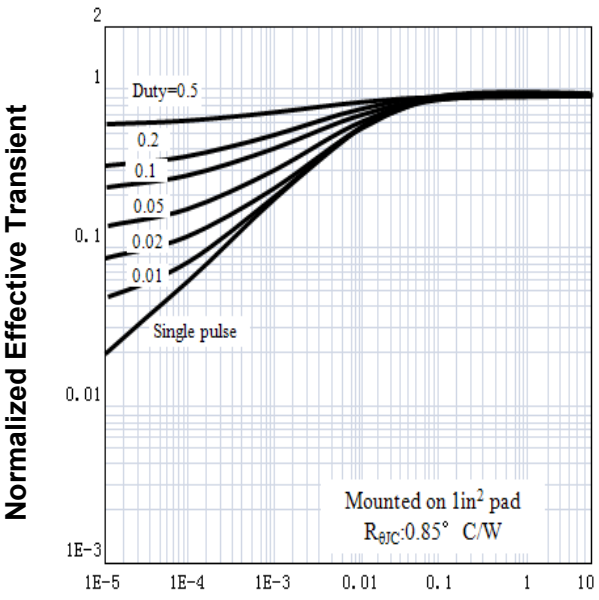
Drain Current



Safe Operation Area

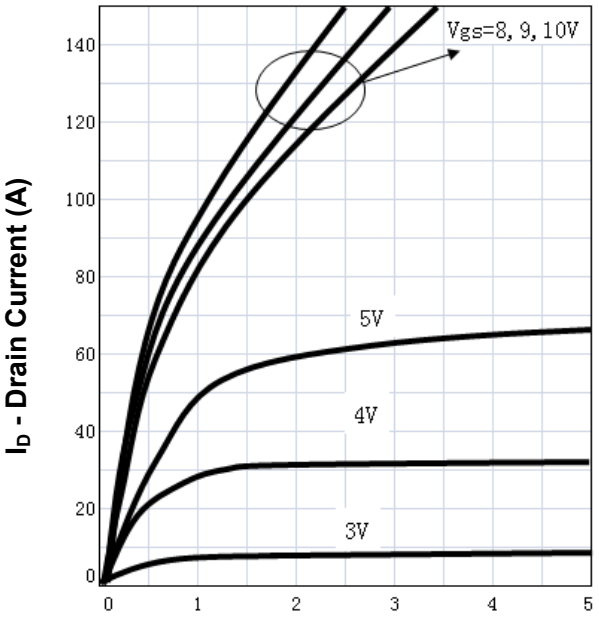


Thermal Transient Impedance

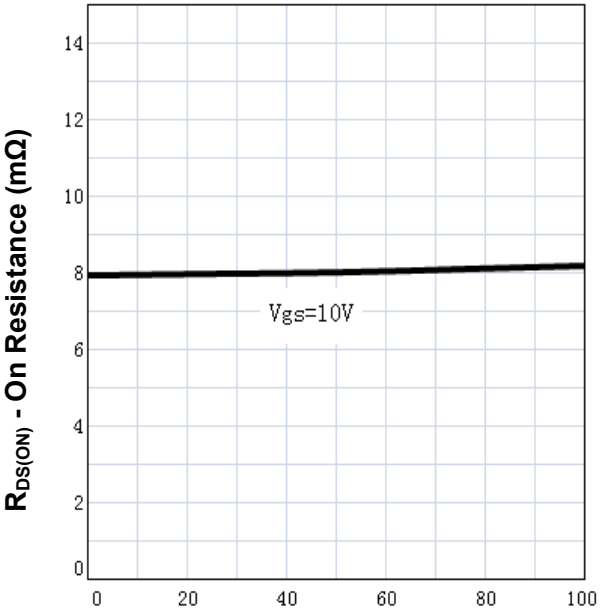


Typical Characteristics

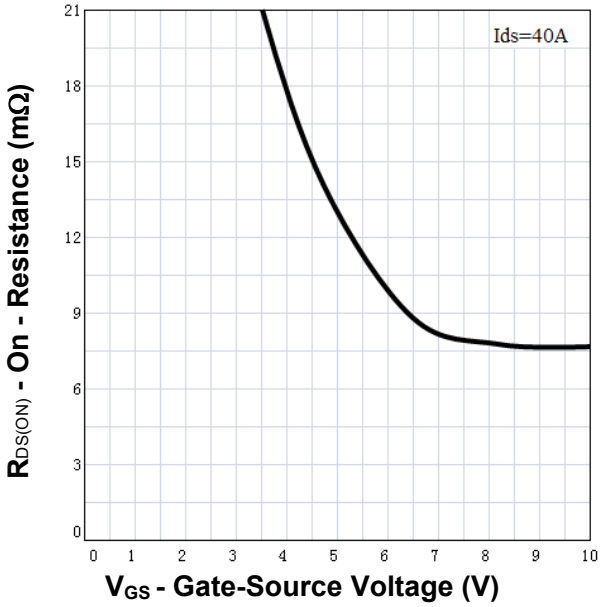
Output Characteristics



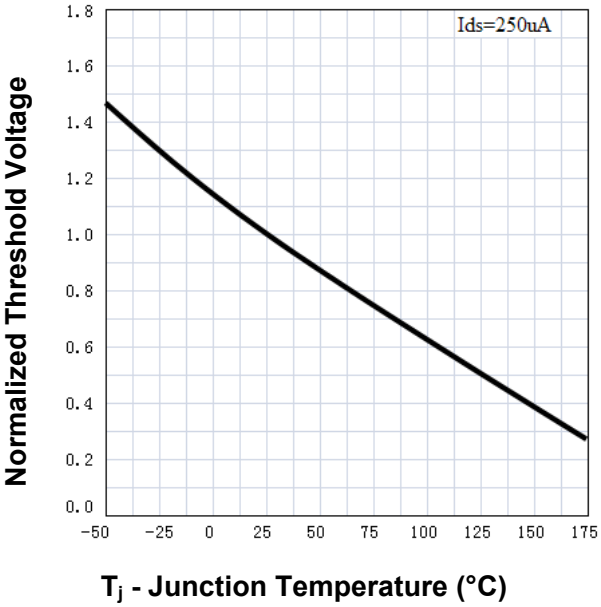
Drain-Source On Resistance



Drain-Source On Resistance

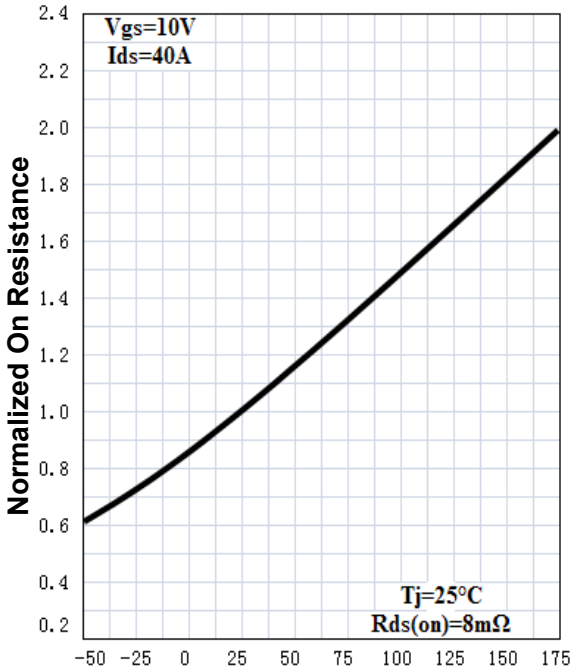


Gate Threshold Voltage



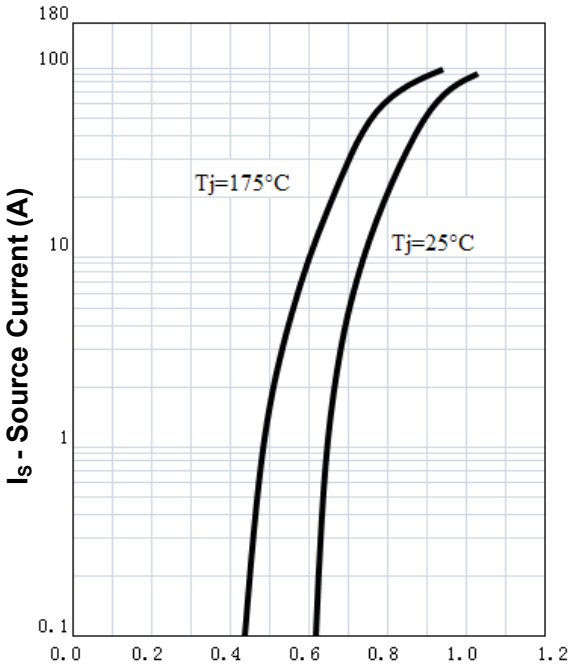
Typical Characteristics

Drain-Source On Resistance



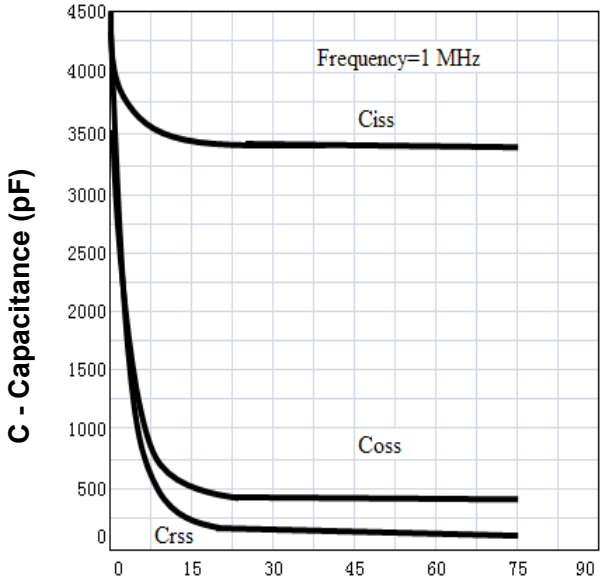
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



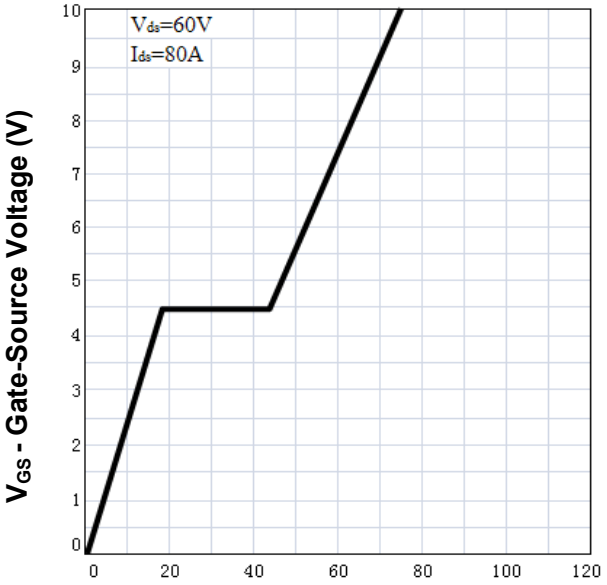
V_{SD} - Source-Drain Voltage (V)

Capacitance



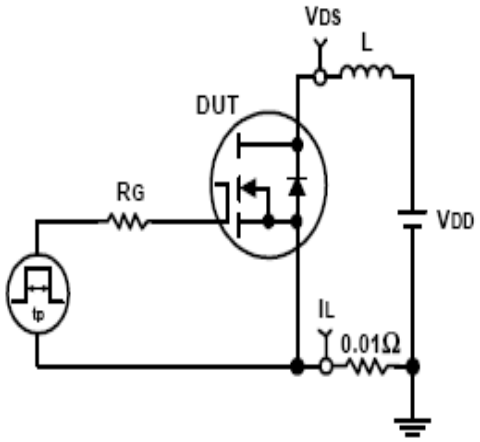
V_{DS} - Drain-Source Voltage (V)

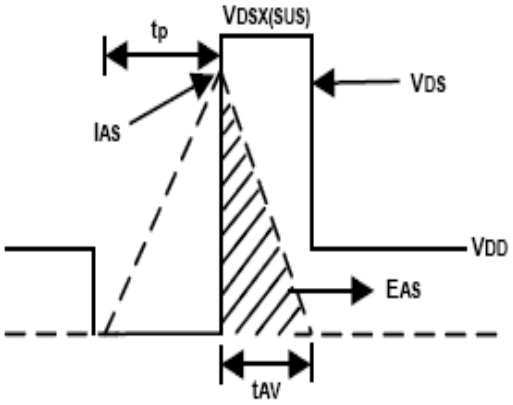
Gate Charge



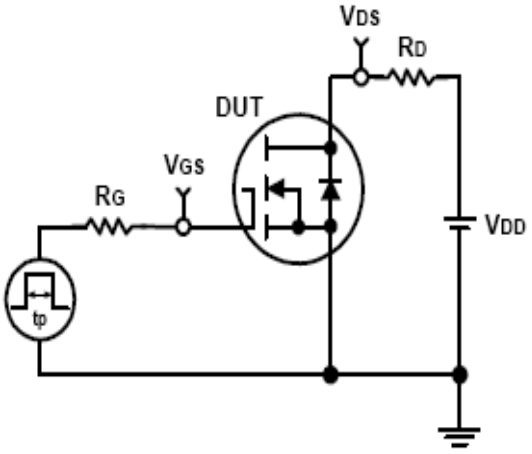
Q_G - Gate Charge (nC)

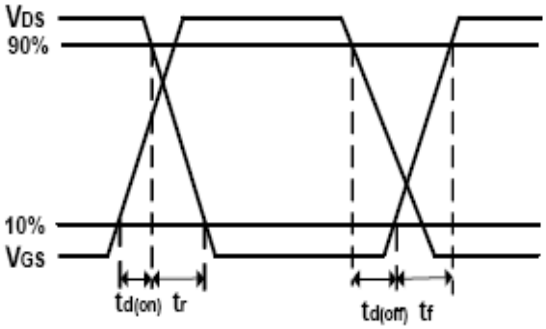
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





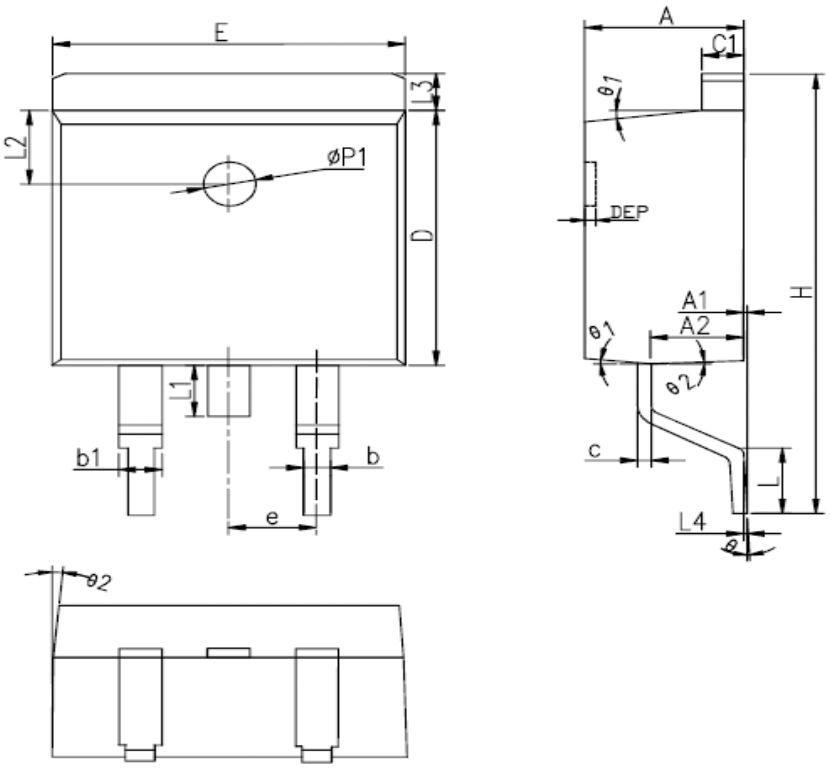
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU75N08S	RU75N08S	TO-263	Tube	50	-	-
RU75N08S-R	RU75N08S	TO-263	Tape&Reel	800	13''	24mm

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Package Information

TO-263-2L



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185	L	2.00	2.30	2.60	0.079	0.090	0.102
A1	0	0.10	0.25	0	0.004	0.010	L3	1.17	1.27	1.40	0.046	0.050	0.055
A2	2.59	2.69	2.79	0.102	0.106	0.110	L1	-	-	1.70	-	-	0.067
b	0.77	-	0.90	0.030	-	0.035	L4	0.25BSC			0.01BSC		
b1	1.23	-	1.36	0.048	-	0.052	L2	2.50REF.			0.098REF.		
c	0.34	-	0.47	0.013	-	0.019	θ	0°	-	8°	0°	-	8°
C1	1.22	-	1.32	0.048	-	0.052	θ 1	5°	7°	9°	5°	7°	9°
D	8.60	8.70	8.80	0.338	0.343	0.346	θ 2	1°	3°	5°	1°	3°	5°
E	10.00	10.16	10.26	0.394	0.4	0.404	DEP	0.05	0.10	0.20	0.002	0.004	0.008
e	2.54BSC			0.1BSC			Øp1	1.40	1.50	1.60	0.055	0.059	0.063
H	14.70	15.10	15.50	0.579	0.594	0.610							

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