

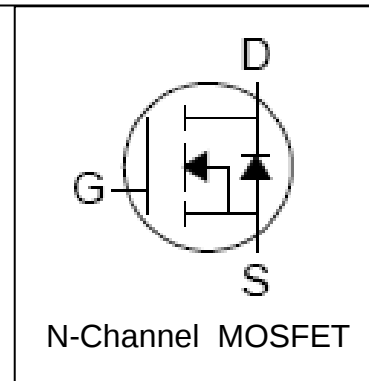
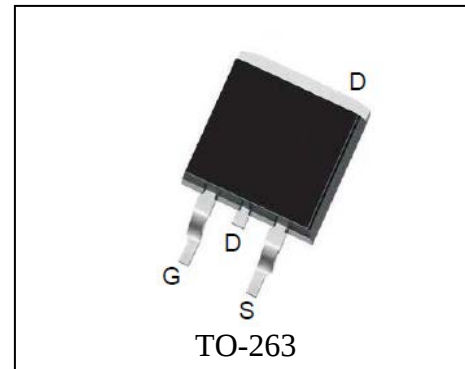
Features

- 75V/150A,
 $R_{DS(ON)} = 5m\Omega(Typ.) @ V_{GS} = 10V$
- Super High Dense Cell Design
- Ultra Low On-Resistance
- 100% avalanche tested
- Lead Free and Green Devices Available
(RoHS Compliant)

Applications

- DC-DC Converters and Off-line UPS
- High Efficiency Synchronous Rectification in SMPS

Pin Description



Absolute Maximum Ratings

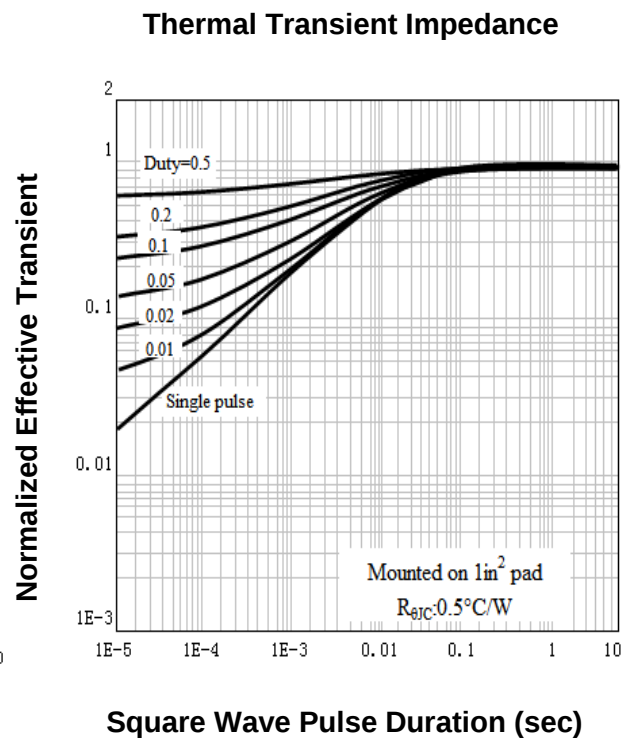
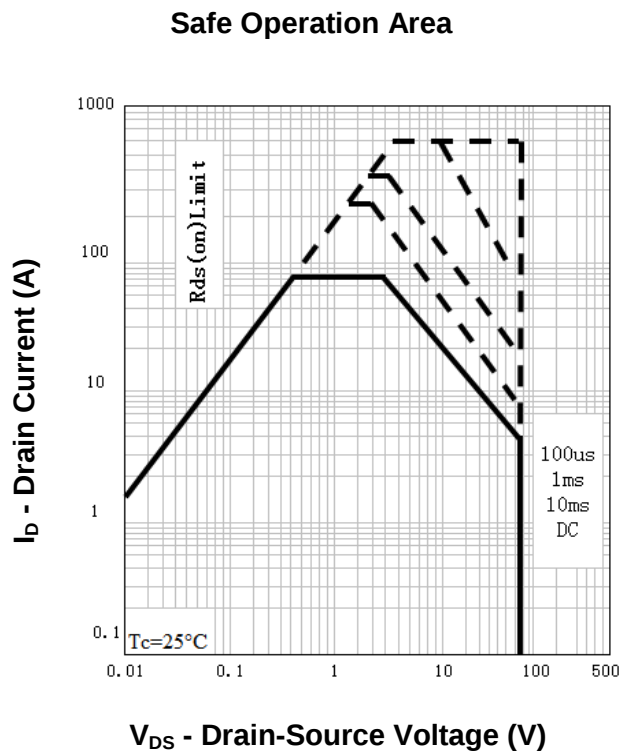
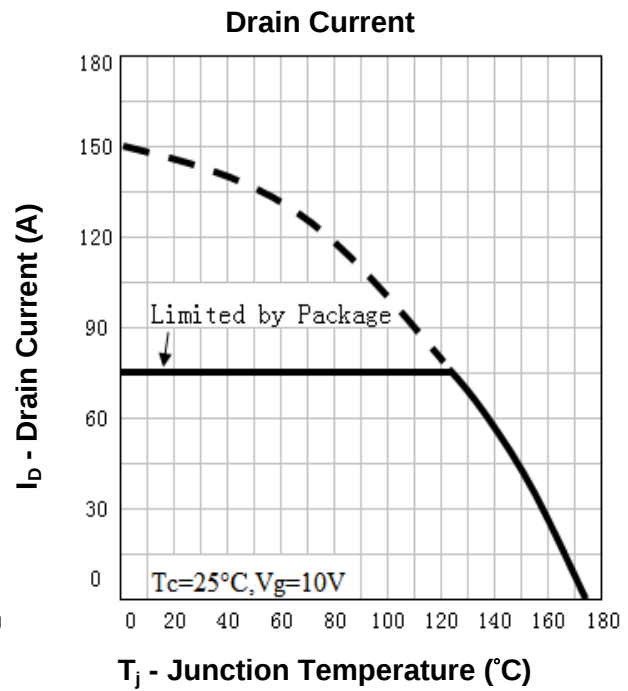
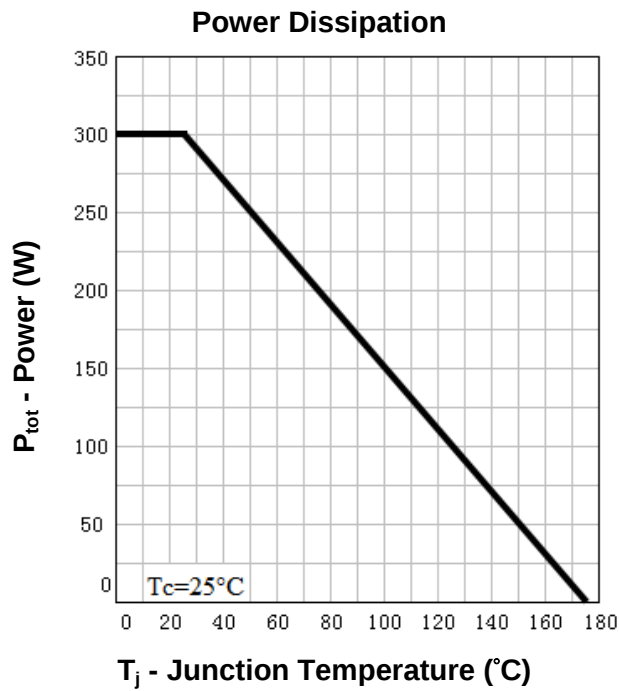
Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		75	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	150 ^①	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _C =25°C	600 ^②	A
I _D	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	150 ^①	A
		T _C =100°C	111 ^①	
P _D	Maximum Power Dissipation	T _C =25°C	300	W
		T _C =100°C	150	W
R _{θJC}	Thermal Resistance-Junction to Case		0.5	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		784	mJ

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

Symbol	Parameter	Test Condition	RU75170S			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 T _J =85°C			1 30	μA
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} =75A		5	6	mΩ
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =75A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =75A, dI _{SD} /dt=100A/μs		42		ns
Q _{rr}	Reverse Recovery Charge			64		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} =37.5V, Frequency=1.0MHz		7200		pF
C _{oSS}	Output Capacitance			700		
C _{rSS}	Reverse Transfer Capacitance			460		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =37.5V, R _L =0.5Ω, I _{DS} =75A, V _{GEN} = 10V, R _G =3.75Ω		26		ns
t _r	Turn-on Rise Time			96		
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} =60V, V _{GS} = 10V, I _{DS} =75A		145		nC
Q _{gs}	Gate-Source Charge			42		
Q _{gd}	Gate-Drain Charge			54		

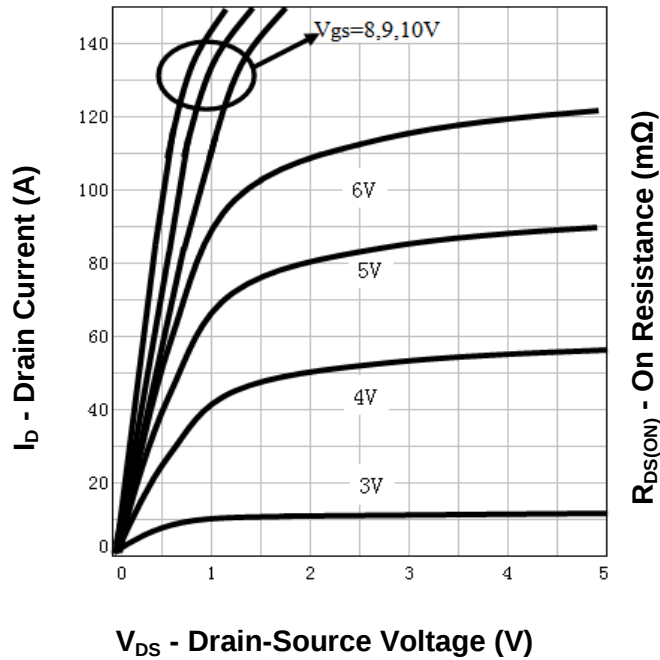
- Notes: ① Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A.
 ② Pulse width limited by safe operating area.
 ③ Limited by T_{Jmax} , $I_{AS}=56A$, $V_{DD}=48V$, $R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ⑤ Guaranteed by design, not subject to production testing.

Typical Characteristics

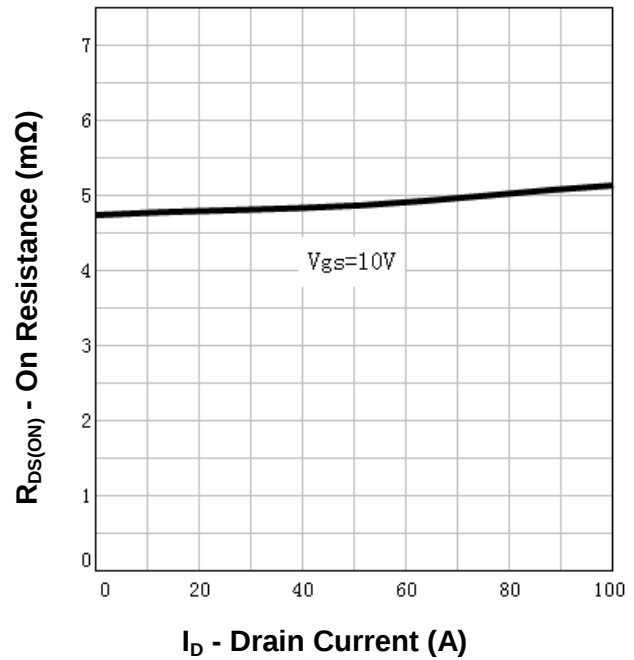


Typical Characteristics

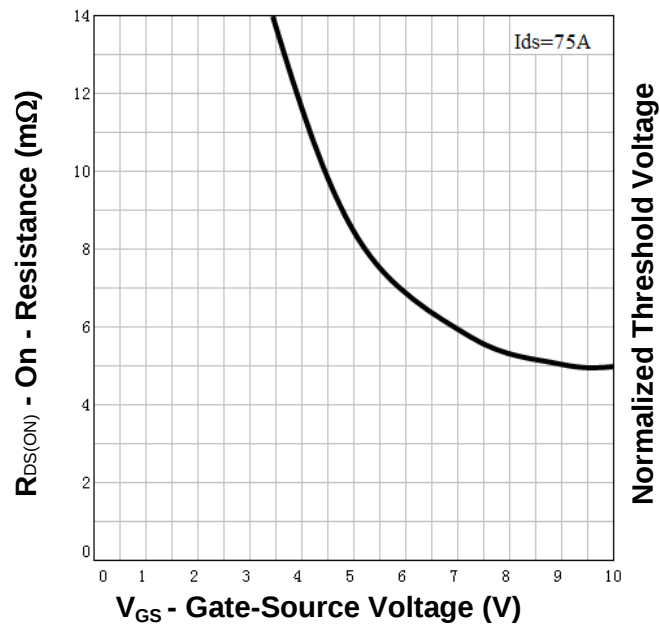
Output Characteristics



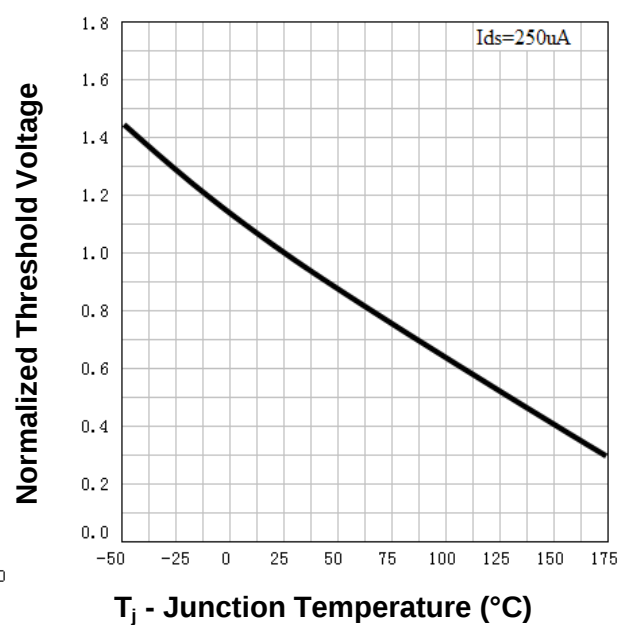
Drain-Source On Resistance



Drain-Source On Resistance

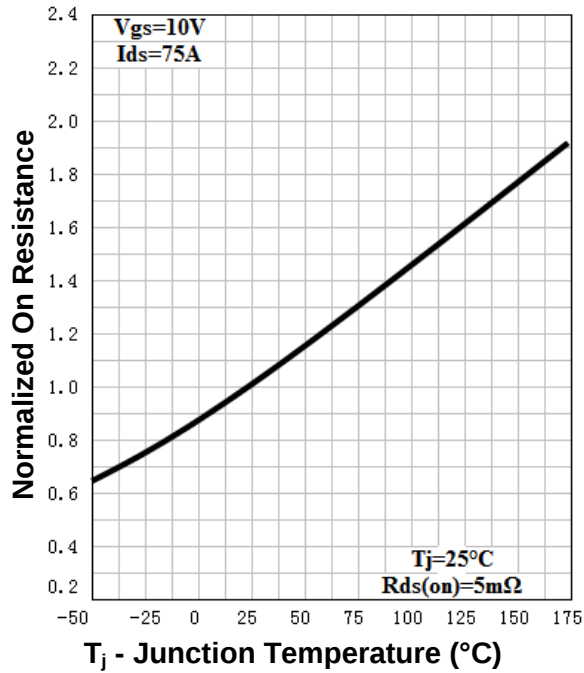


Gate Threshold Voltage

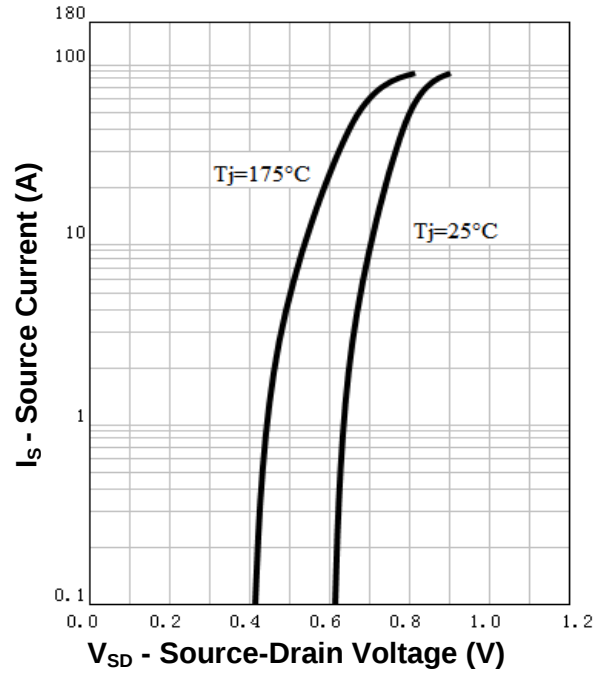


Typical Characteristics

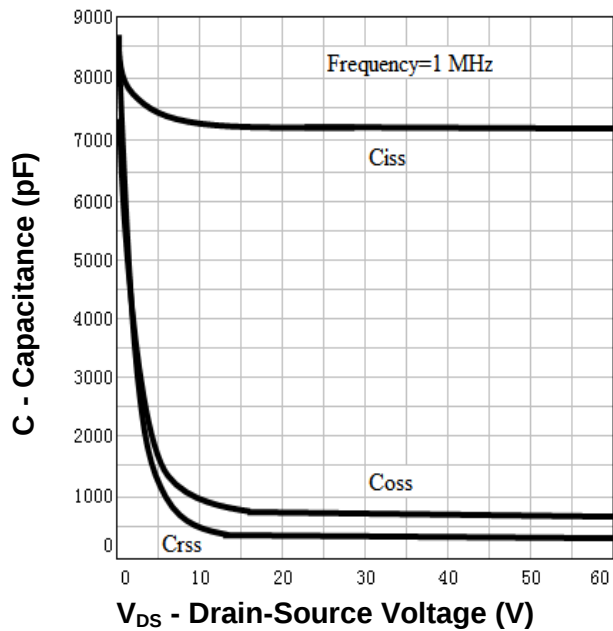
Drain-Source On Resistance



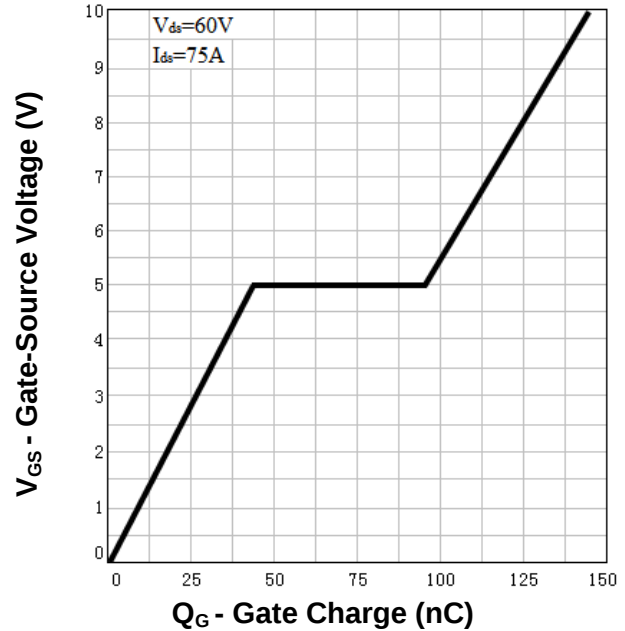
Source-Drain Diode Forward



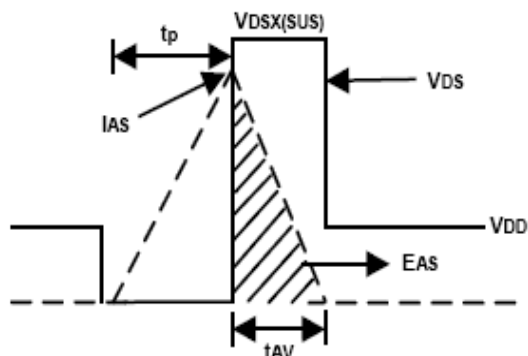
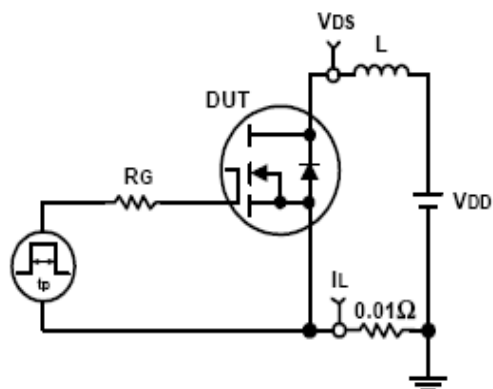
Capacitance



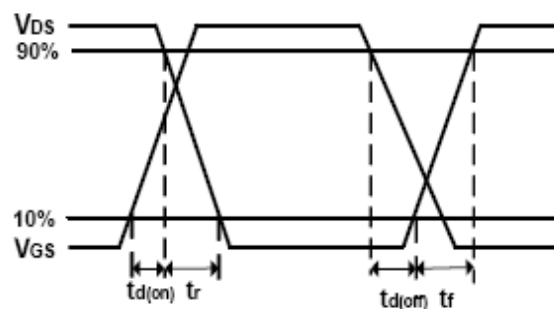
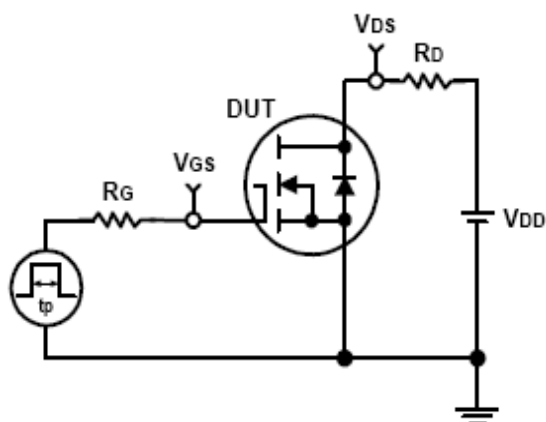
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

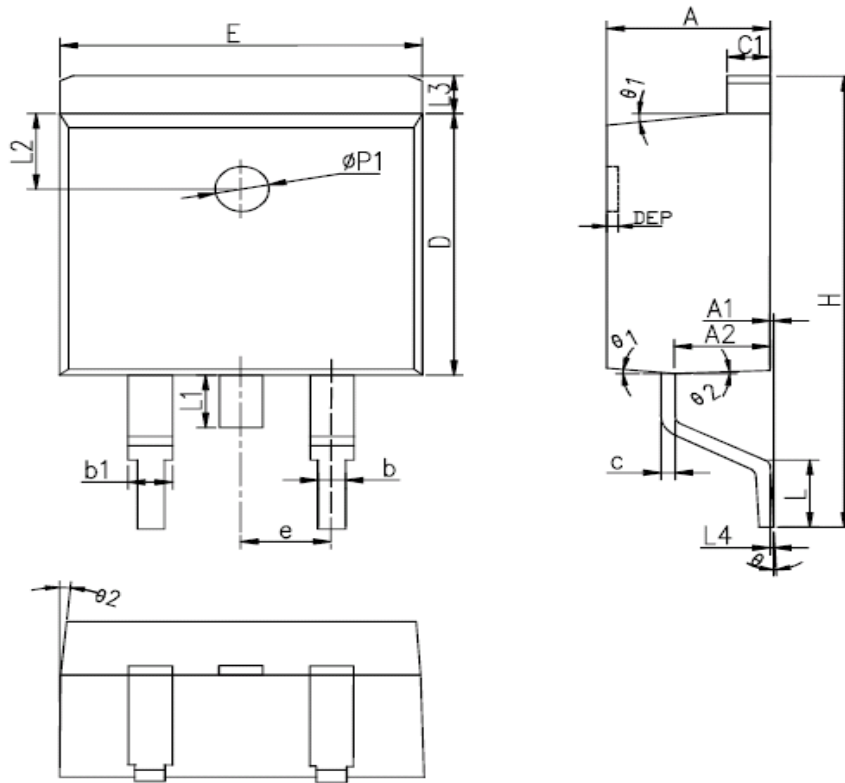


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU75170S	RU75170S	TO-263	Tube	50	-	-

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							

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

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