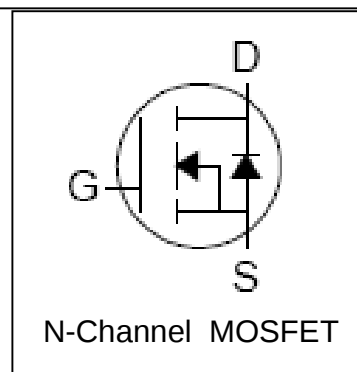
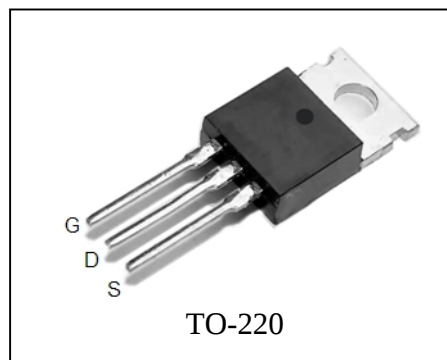


Features

- 75V/55A,
 $R_{DS(ON)} = 11m\Omega(Typ.) @ V_{GS}=10V$
- Super High Dense Cell Design
- 100% avalanche tested
- Lead Free and Green Devices Available
(RoHS Compliant)

Pin Description



Applications

- DC-DC Converters and Off-line UPS
- Automotive Load Control
- Electronic Power Steering System
- Electronic Valve Train System

Absolute Maximum Ratings

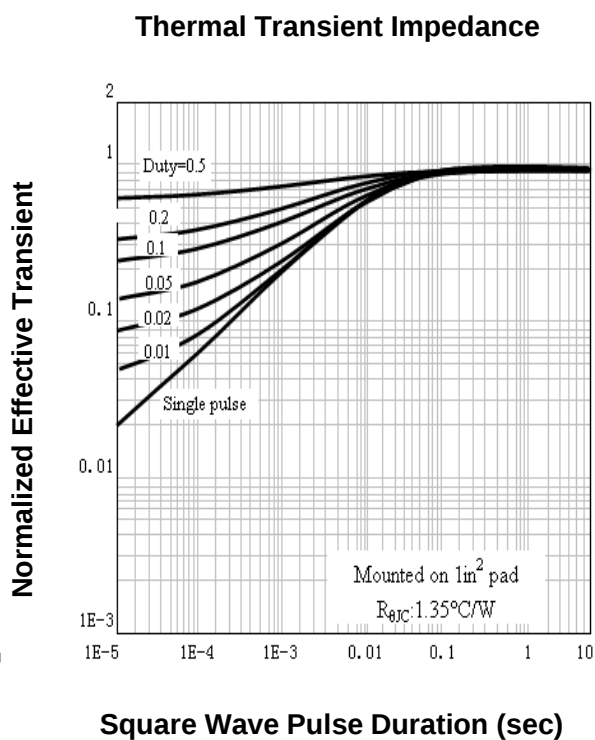
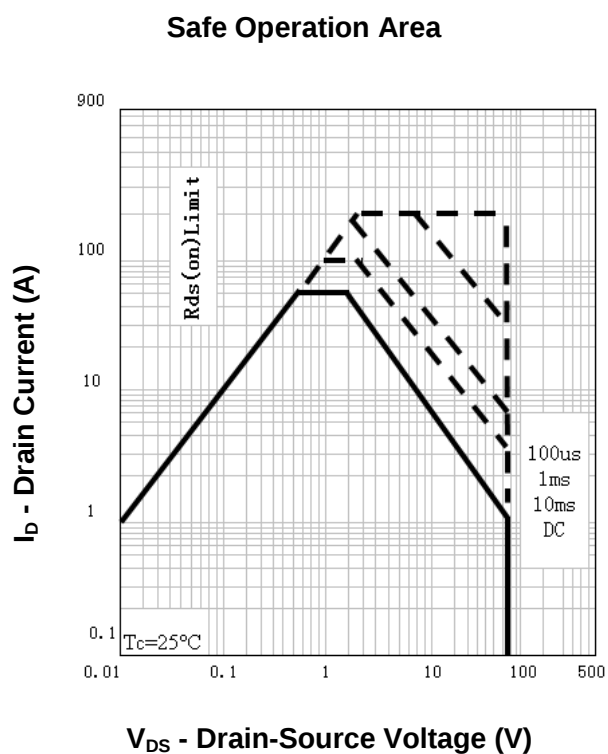
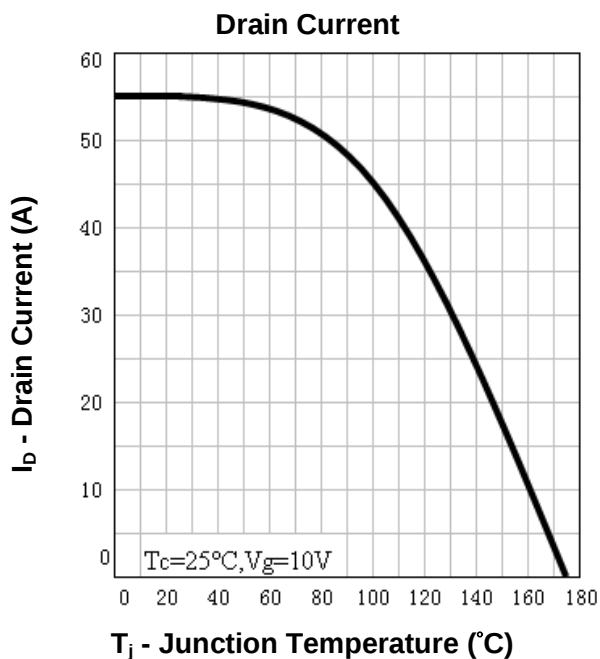
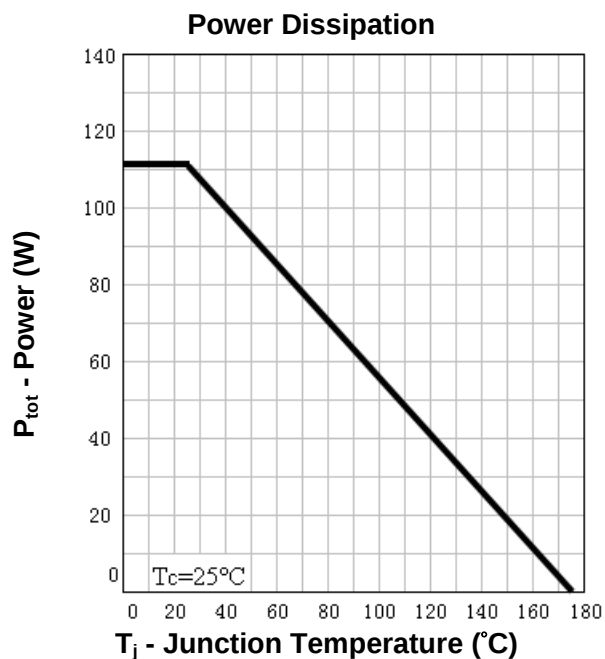
Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		75	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	50	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _C =25°C	200 ^①	A
I _D	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	55 ^②	A
		T _C =100°C	46	
P _D	Maximum Power Dissipation	T _C =25°C	111	W
		T _C =100°C	56	W
R _{θJC}	Thermal Resistance-Junction to Case		1.35	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		430	mJ

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

Symbol	Parameter	Test Condition	RU7550R			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			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} =30A		11	13	mΩ
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =30A, V _{GS} =0V		0.8	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =30A, dI _{SD} /dt=100A/μs		33		ns
Q _{rr}	Reverse Recovery Charge			30		nC
Dynamic Characteristics ^⑤						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.8		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} = 35V, Frequency=1.0MHz		1870		pF
C _{oss}	Output Capacitance			280		
C _{rss}	Reverse Transfer Capacitance			93		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =40V, R _L =30Ω, I _{DS} =30A, V _{GEN} = 10V, R _G =4.7Ω		10		ns
t _r	Turn-on Rise Time			55		
t _{d(OFF)}	Turn-off Delay Time			31		
t _f	Turn-off Fall Time			21		
Gate Charge Characteristics ^⑤						
Q _g	Total Gate Charge	V _{DS} =60V, V _{GS} = 10V, I _{DS} =30A		35		nC
Q _{gs}	Gate-Source Charge			11		
Q _{gd}	Gate-Drain Charge			8		

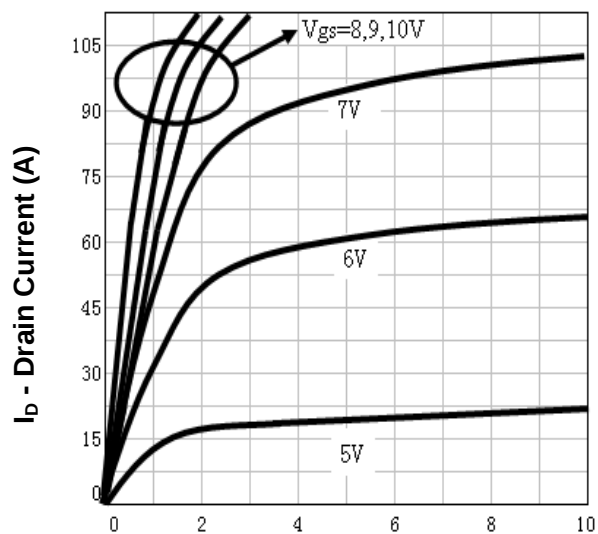
- Notes: ① Pulse width limited by safe operating area.
 ② Calculated continuous current based on maximum allowable junction temperature.
 ③ Limited by $T_{Jmax}, I_{AS}=25A, V_{DD}=48V, R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.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

Typical Characteristics



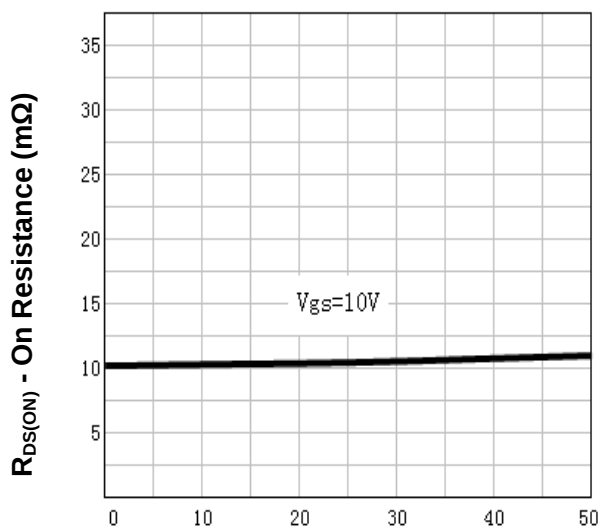
Typical Characteristics

Output Characteristics



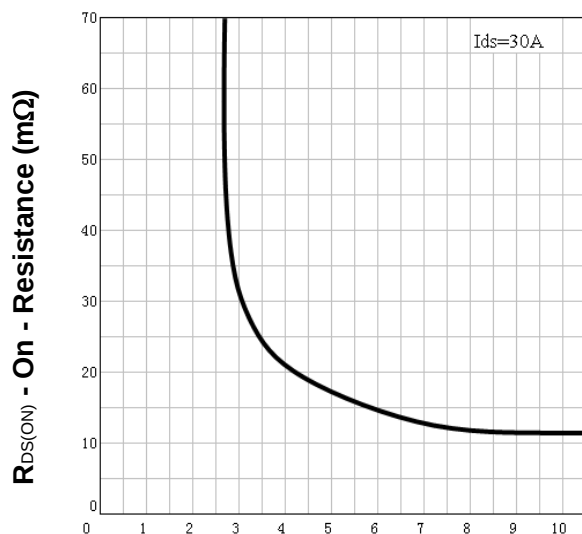
V_{DS} - Drain-Source Voltage (V)

Drain-Source On Resistance



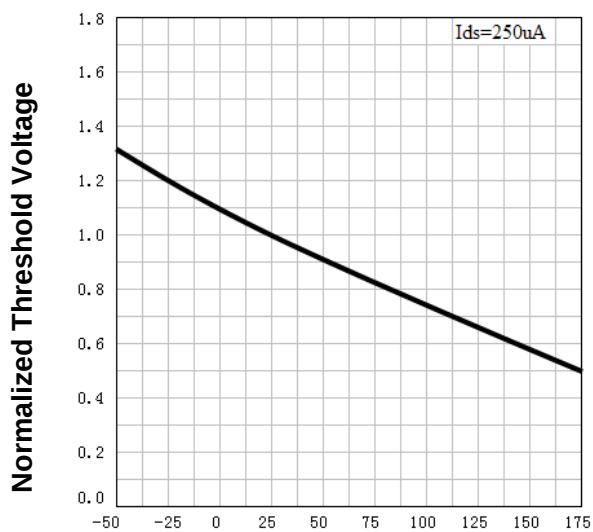
I_D - Drain Current (A)

Drain-Source On Resistance



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

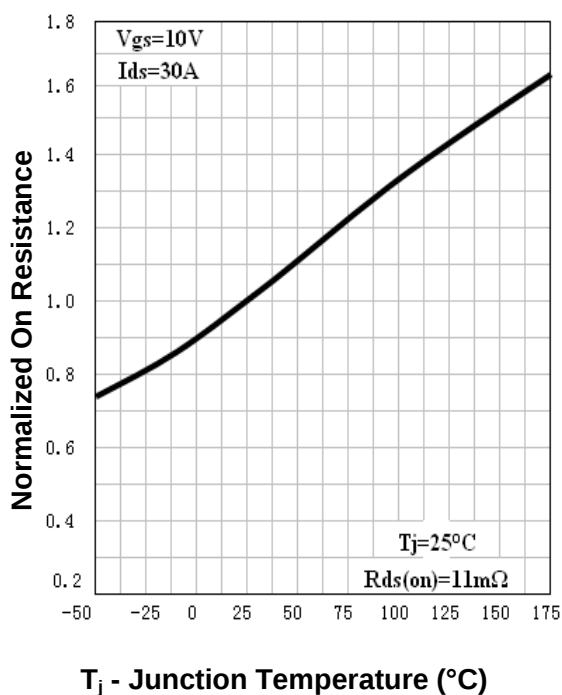
Gate Threshold Voltage



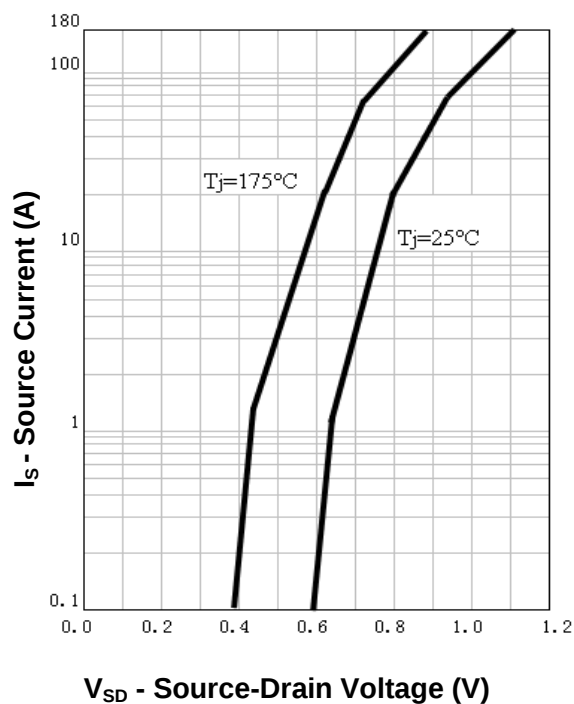
T_j - Junction Temperature ($^{\circ}C$)

Typical Characteristics

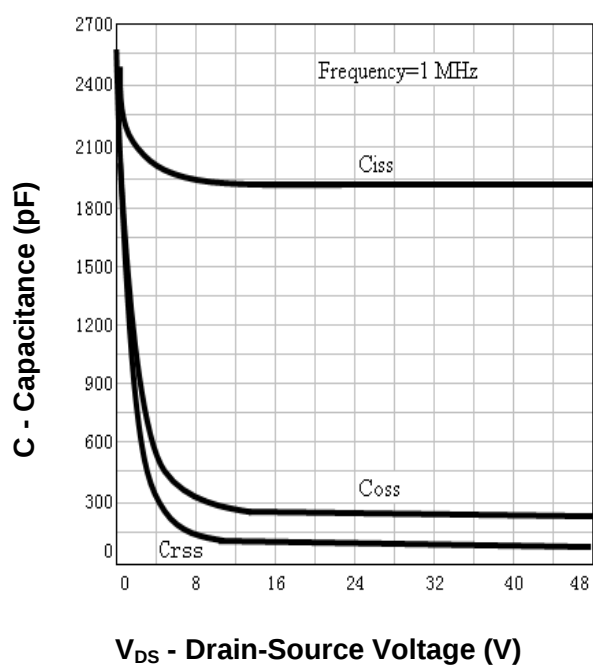
Drain-Source On Resistance



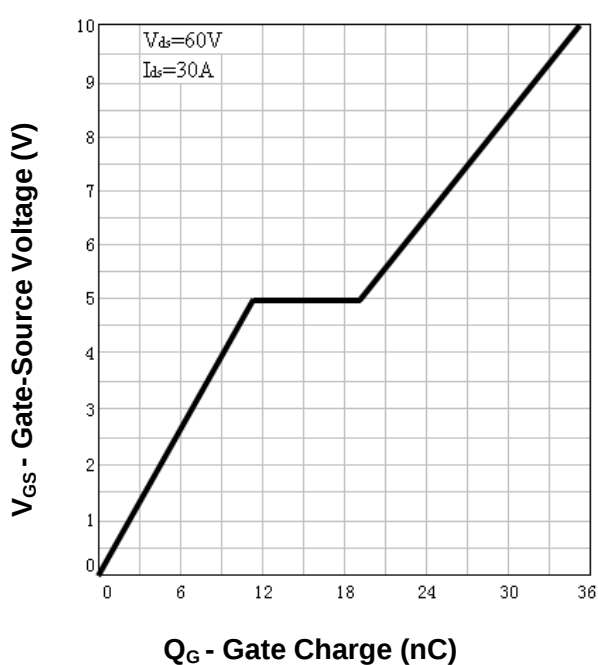
Source-Drain Diode Forward



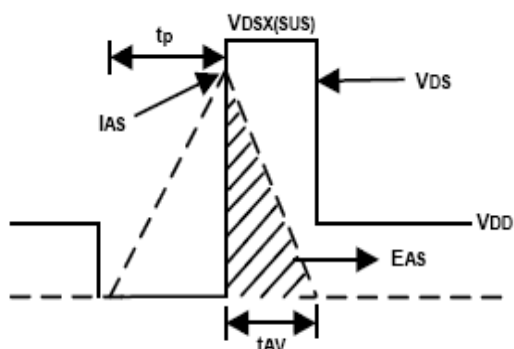
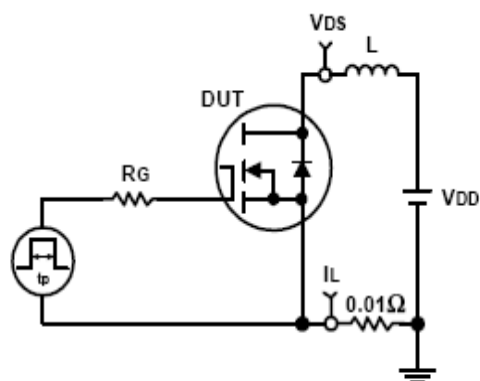
Capacitance



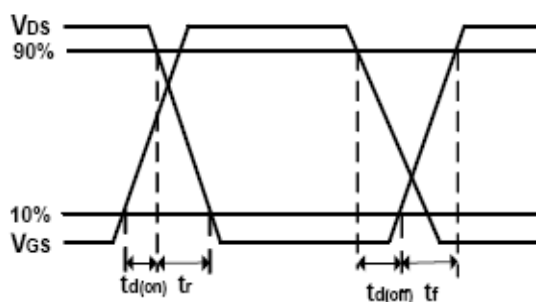
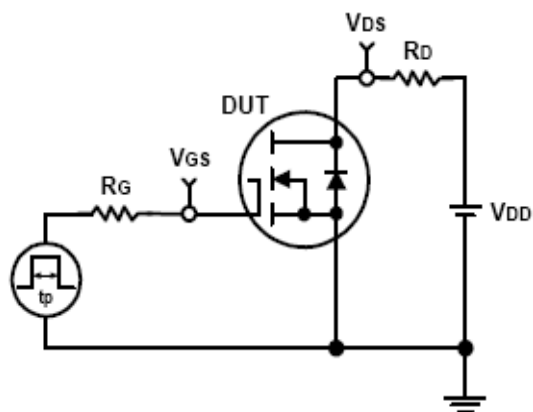
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

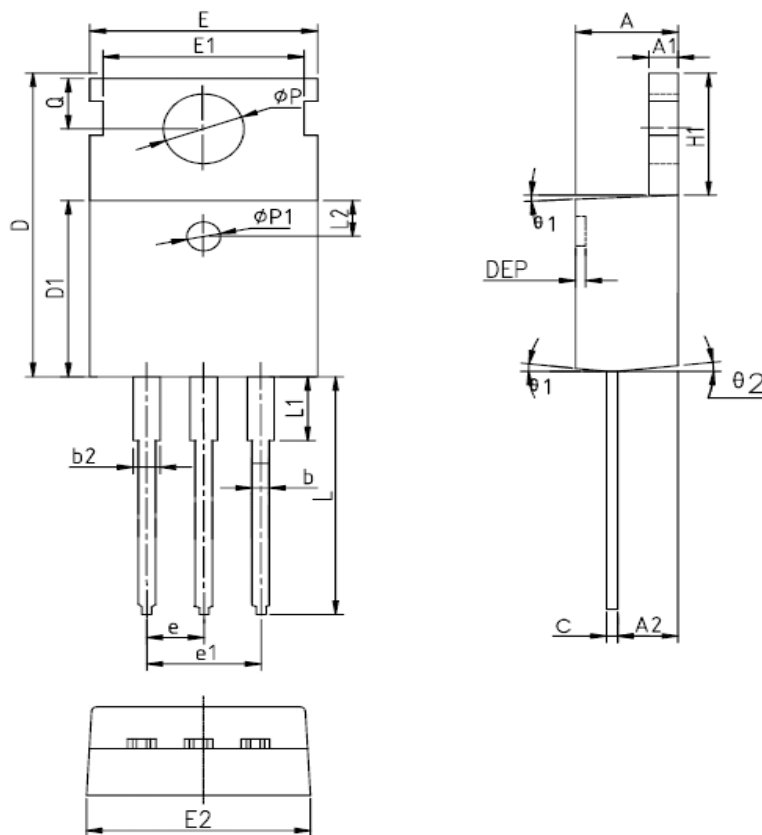


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU7550R	RU7550R	TO-220	Tube	50	-	-

Package Information

TO-220FB-3L



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	$\phi p1$	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.27	1.30	1.33	0.050	0.051	0.052	e	2.54BSC			0.1BSC		
A2	2.35	2.40	2.50	0.093	0.094	0.098	e1	5.08BSC			0.2BSC		
b	0.77	-	0.90	0.030	-	0.035	H1	6.40	6.50	6.60	0.252	0.256	0.260
b2	1.23	-	1.36	0.048	-	0.054	L	12.75	-	13.17	0.502	-	0.519
C	0.48	0.50	0.52	0.019	0.020	0.021	L1	-	-	3.95	-	-	0.156
D	15.40	15.60	15.80	0.606	0.614	0.622	L2	2.50REF.			0.098REF.		
D1	9.00	9.10	9.20	0.354	0.358	0.362	ϕp	3.57	3.60	3.63	0.141	0.142	0.143
DEP	0.05	0.10	0.20	0.002	0.004	0.008	Q	2.73	2.80	2.87	0.107	0.110	0.113
E	9.70	9.90	10.10	0.382	0.389	0.398	$\theta 1$	5°	7°	9°	5°	7°	9°
E1	-	8.70	-	-	0.343	-	$\theta 2$	1°	3°	5°	1°	3°	5°
E2	9.80	10.00	10.20	0.386	0.394	0.401							

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

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