

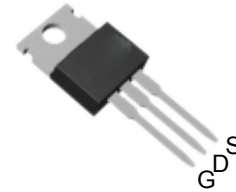
Features

- -60V/-72.5A,
 $R_{DS(ON)} = 10m\Omega(\text{typ.}) @ V_{GS} = -10V$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)
- 100% UIS Tested

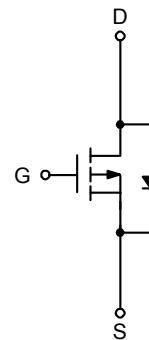
Applications

- Power Management in Desktop Computer or
DC/ DC Converters

Pin Description



Top View of TO-220



P-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		-60	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current		-40	A
I _{AS} ^a	Avalanche Current, Single pulse	L=1mH	-30	A
E _{AS} ^a	Avalanche Energy, Single pulse	L=1mH	450	mJ
I _{DP}	Pulse Drain Current Tested	T _C =25°C	-140 *	A
I _D	Continuous Drain Current	T _C =25°C	-72.5	
		T _C =100°C	-46	
P _D	Maximum Power Dissipation	T _C =25°C	132	W
		T _C =100°C	53	
R _{θJC}	Thermal Resistance-Junction to Case		0.95	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		62.5	

Note * : Current limited by bond wire.

Note a : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

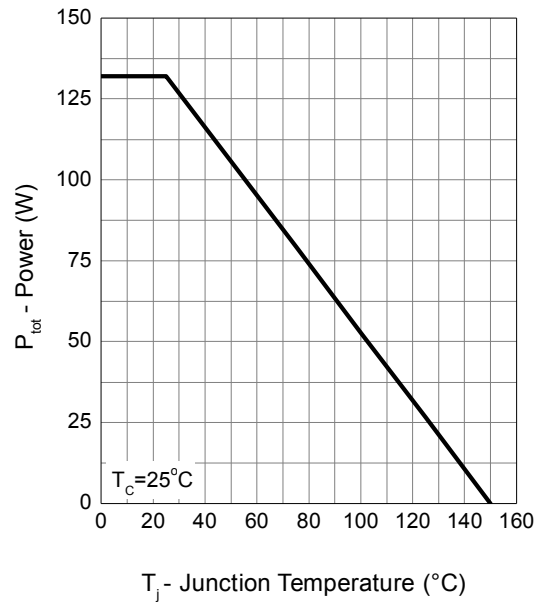
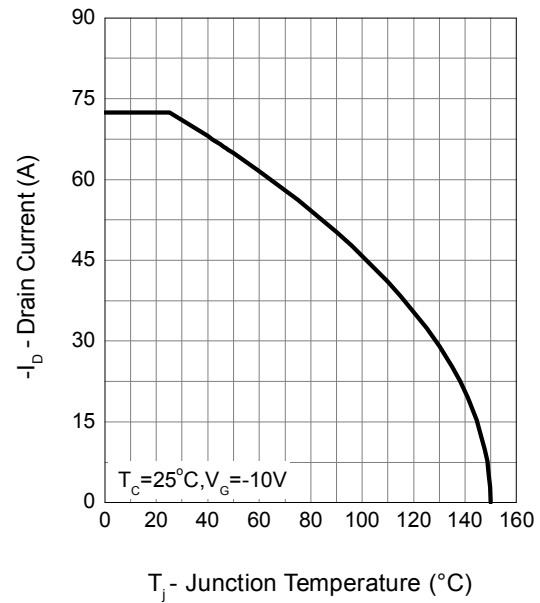
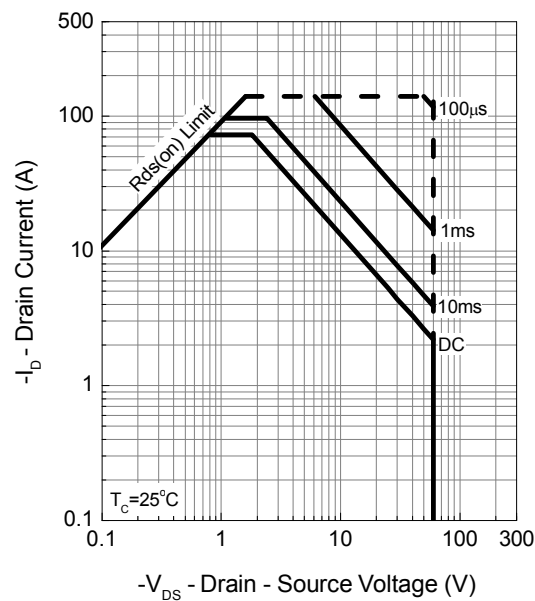
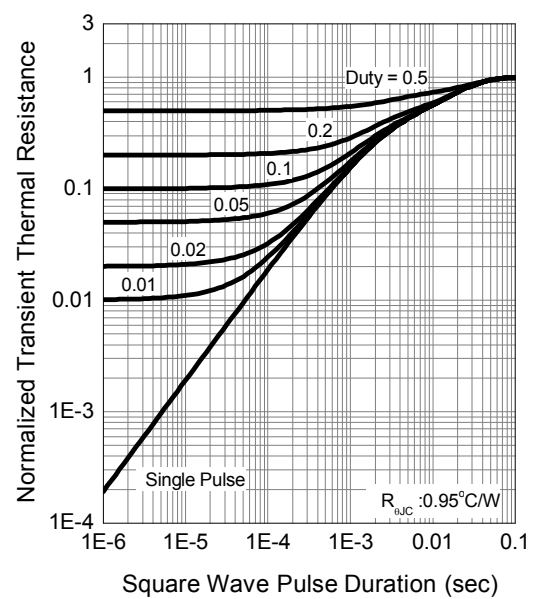
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-48V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1	-1.6	-3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^b	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-25A	-	10	12.5	mΩ
Diode Characteristics						
V _{SD} ^b	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-25A, dI _{SD} /dt=100A/μs	-	35	-	ns
Q _{rr}	Reverse Recovery Charge		-	37	-	nC
Dynamic Characteristics ^c						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	2.7	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, Frequency=1.0MHz	-	4068	-	pF
C _{oss}	Output Capacitance		-	495	-	
C _{rss}	Reverse Transfer Capacitance		-	281	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, R _L =30Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	15	-	ns
t _r	Turn-on Rise Time		-	13	-	
t _{d(OFF)}	Turn-off Delay Time		-	119	-	
t _f	Turn-off Fall Time		-	60	-	
Gate Charge Characteristics ^c						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-25A	-	88	-	nC
Q _{gs}	Gate-Source Charge		-	12	-	
Q _{gd}	Gate-Drain Charge		-	21	-	

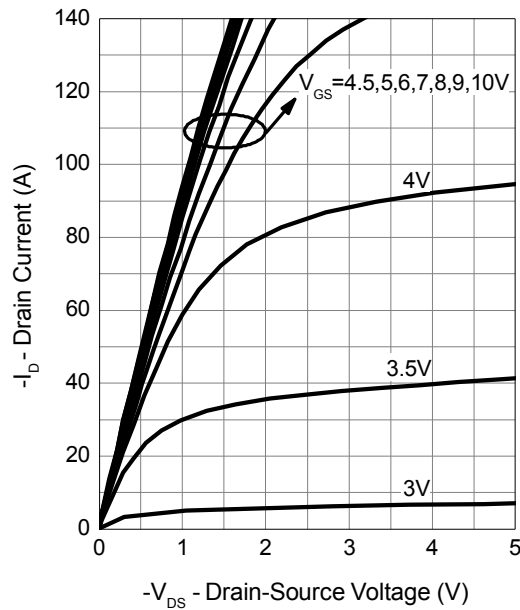
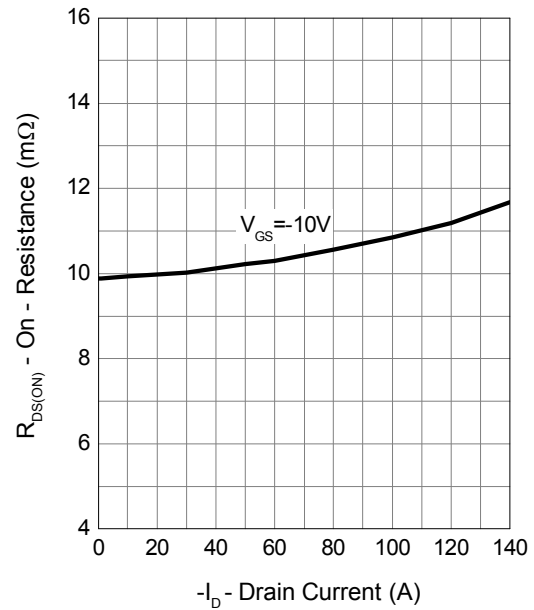
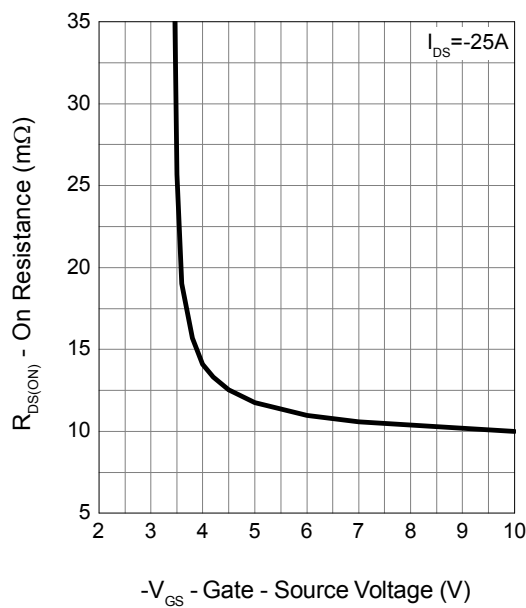
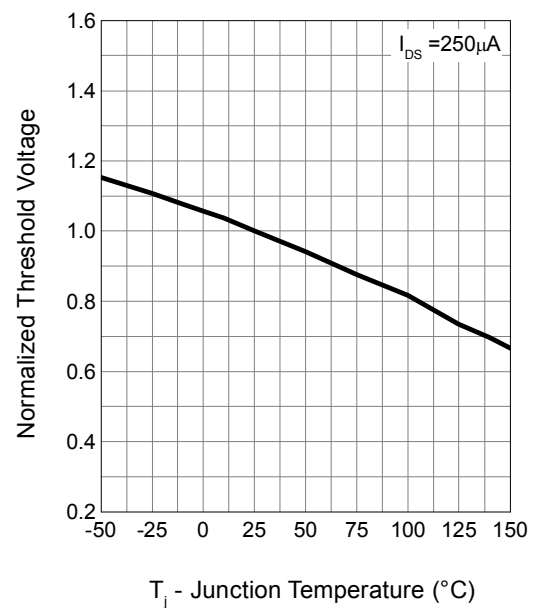
Note b : Pulse test; pulse width≤300μs, duty cycle≤2%.

Note c : Guaranteed by design, not subject to production testing.

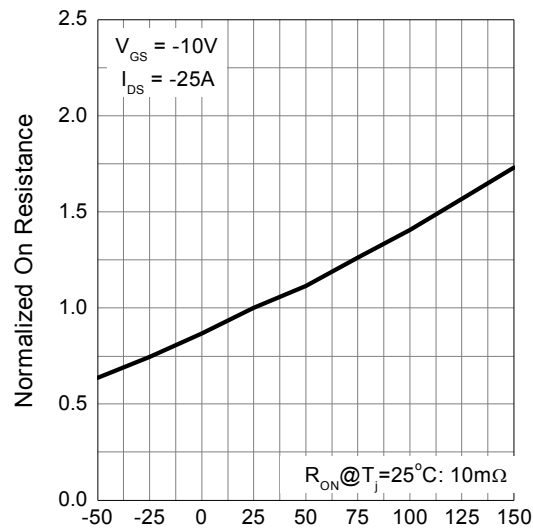
Typical Operating Characteristics

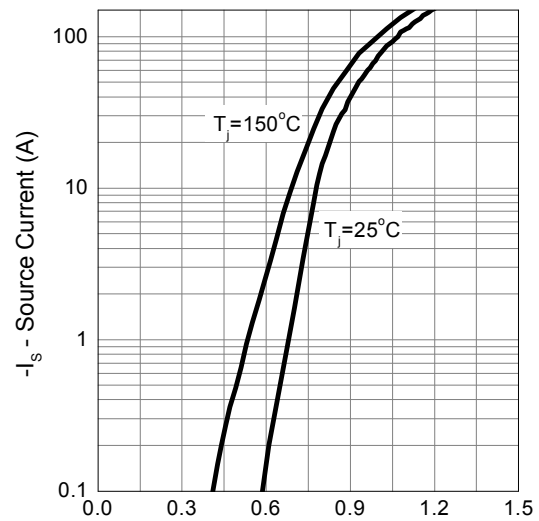
Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


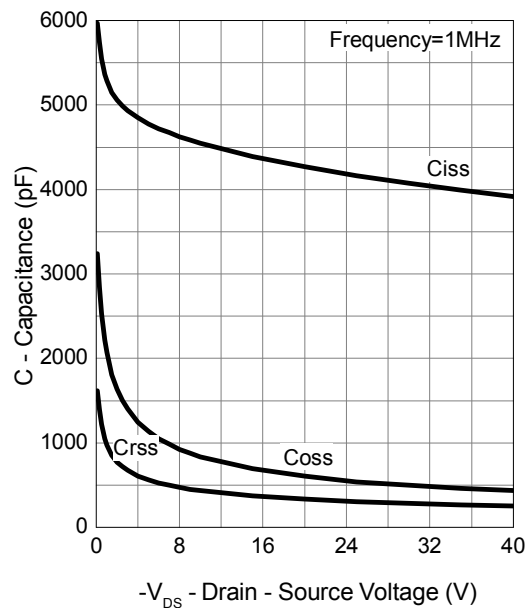
Typical Operating Characteristics (Cont.)

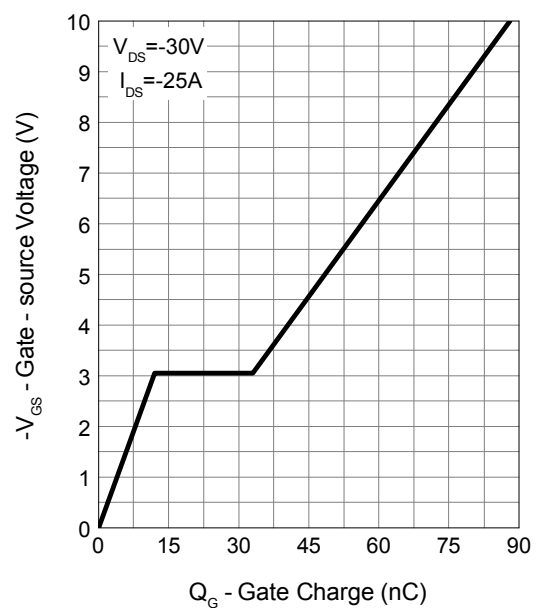
Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


Typical Operating Characteristics (Cont.)

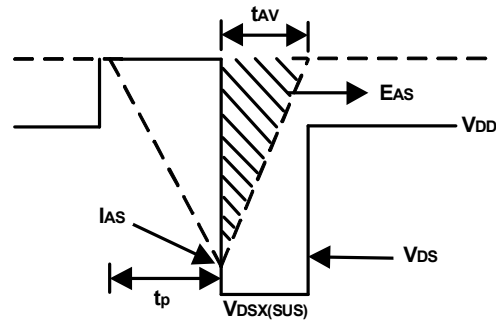
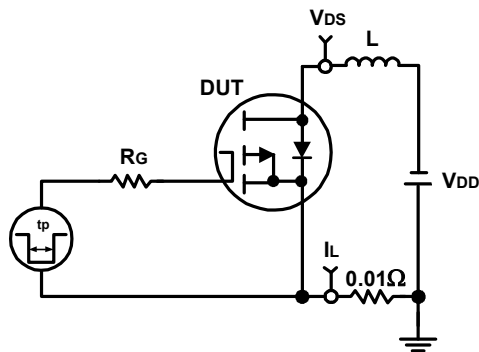
Drain-Source On Resistance

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

Source-Drain Diode Forward

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

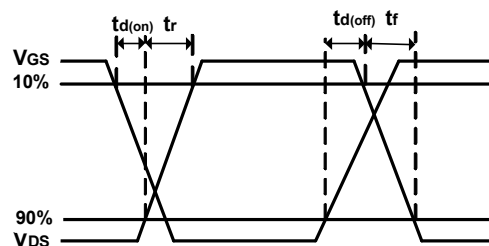
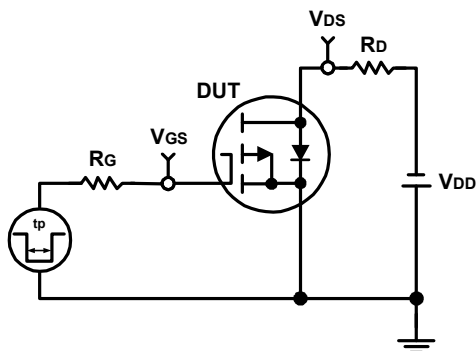
Capacitance

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

Gate Charge

 Q_G - Gate Charge (nC)

Avalanche Test Circuit and Waveforms

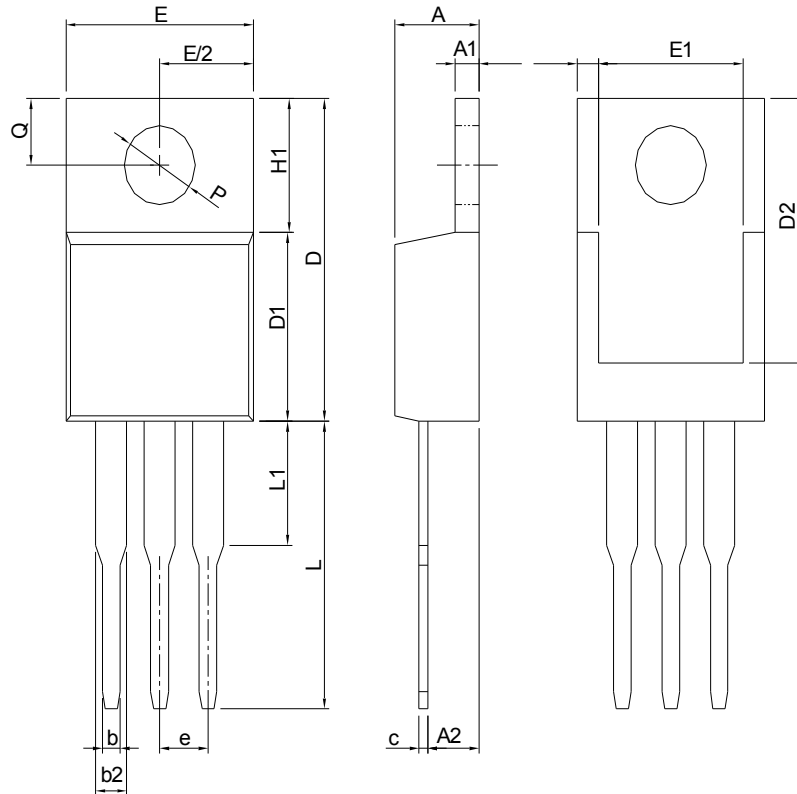


Switching Time Test Circuit and Waveforms



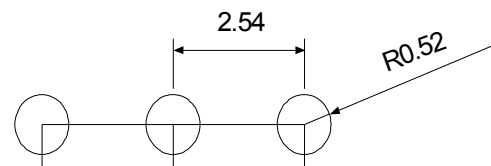
Package Information

TO-220



SYMBOL	TO-220			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	3.56	4.83	0.140	0.190
A1	0.51	1.40	0.020	0.055
A2	2.03	2.92	0.080	0.115
b	0.38	1.02	0.015	0.040
b2	1.14	1.78	0.045	0.070
c	0.36	0.61	0.014	0.024
D	14.22	16.51	0.560	0.650
D1	8.38	9.02	0.330	0.355
D2	12.19	13.65	0.480	0.537
E	9.65	10.67	0.380	0.420
E1	6.86	8.89	0.270	0.350
e	2.54 BSC		0.100 BSC	
H1	5.84	6.86	0.230	0.270
L	12.70	14.73	0.500	0.580
L1	-	6.35	-	0.250
P	3.53	4.09	0.139	0.161
Q	2.54	3.43	0.100	0.135

RECOMMENDED LAND PATTERN



UNIT: mm

Note: Follow JEDEC TO-220 AB.