

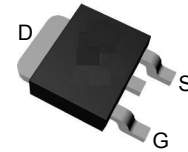
N-Channl Enhancement Mode MOSFET

- 60V/50A
- $R_{DS(ON)}=12m\Omega$ (typ.) @VGS=10V
 $R_{DS(ON)}=15m\Omega$ (typ.) @VGS=4.5V
- 100% UIS & RG Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

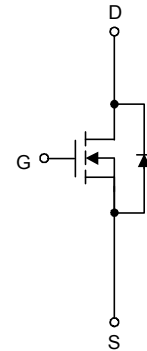
Applic

- Power Management for Industrial DC/DC Converters

Pin Configuration



Top View of TO-252



N-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		±20	
I _D	Continuous Drain Current	Tc=25°C	50	A
		Tc=100°C	38	
I _{DM} ^a	Pulsed Drain Current	Tc=25°C	150	
P _D	Power Dissipation	T _C =25°C	59.5	W
		T _C =100°C	23	
I _S	Diode Continuous Forward Current	Tc=25°C	50	A
T _{STG} , T _j	Storage Temperature Range		-55 to 150	°C
I _{AS} ^b	Single pulsed avalanche Current	L=0.1mH	27	A
E _{AS} ^b	Single pulsed avalanche energy	L=0.1mH	36	mJ
R _{θJC}	Thermal Resistance-Junction to Case		2.1	°C/W
R _{θJA} ^c	Thermal Resistance-Junction to Ambient		50	

Note a : Pulse width limited by max. junction temperature.

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

Note c : Surface Mounted on 1in^2 pad area.

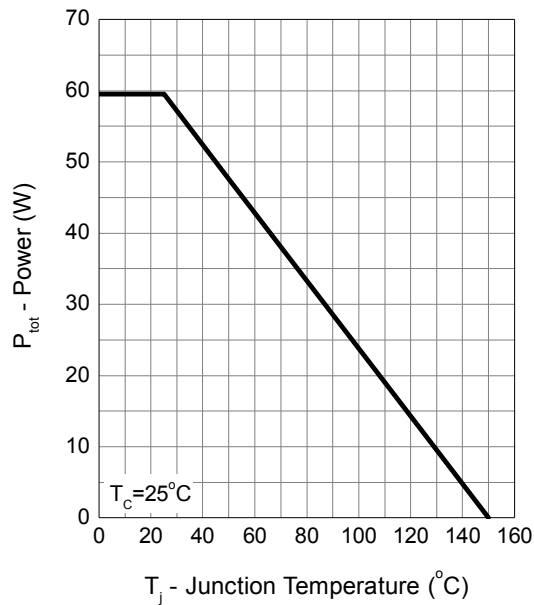
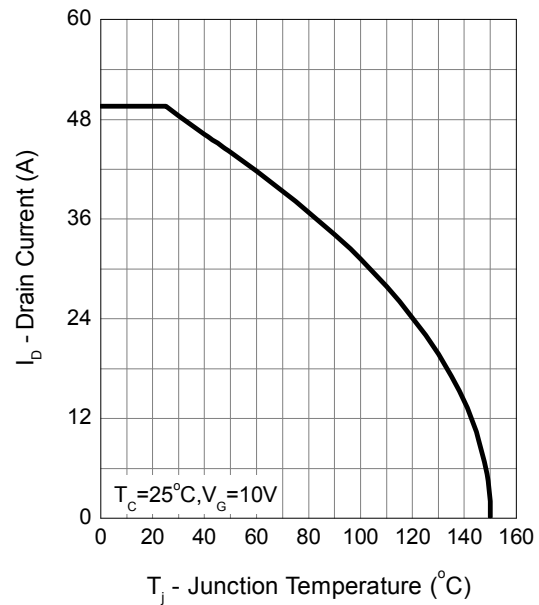
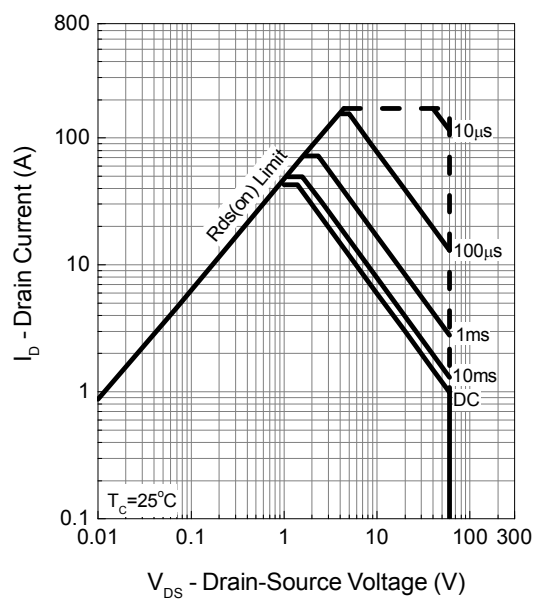
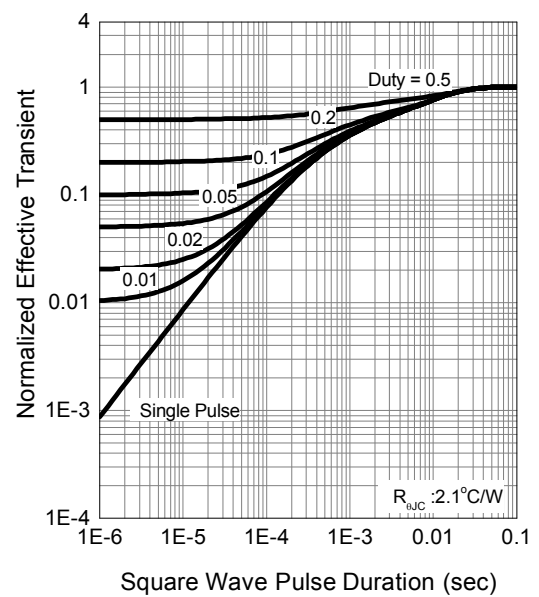
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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
		Tj=85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1	-	3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =20A	-	13	19	mΩ
		V _{GS} =4.5V, I _{DS} =20A	-	18	21	
Body Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V	0.8	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} =20A, dI _{SD} /dt=100A/μs	-	23	-	ns
Q _{rr}	Reverse Recovery Charge		-	25	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	2.5	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz	-	1210	-	pF
C _{oss}	Output Capacitance		-	135	-	
C _{rss}	Reverse transfer capacitance		-	60	-	
t _{d(ON)}	Turn-on delay Time	VGS=10V ,VDS=30V R _G =6Ω, ID=1A , R _L =30Ω	-	14	26	nS
t _r	Turn-on rise Time		-	8	15	
t _{d(OFF)}	Turn-off delay Time		-	38	69	
t _f	Turn-off rise Time		-	12	22	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	VDS =30V, VGS=4.5V, IDS=20A	-	12	-	nC
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _{DS} =20A	-	26	-	
Q _{gs}	Gate-Source Charge		-	5	-	
Q _{gd}	Gate-Drain Charge		-	5	-	

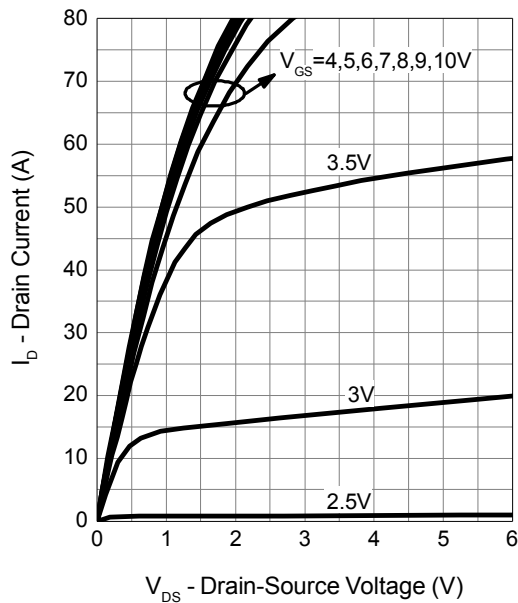
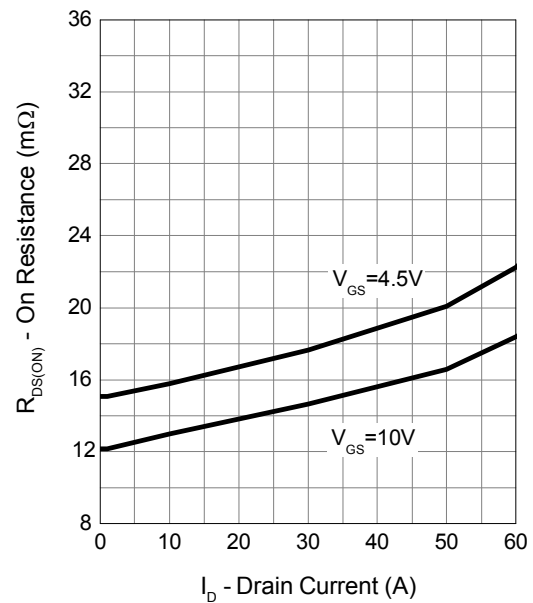
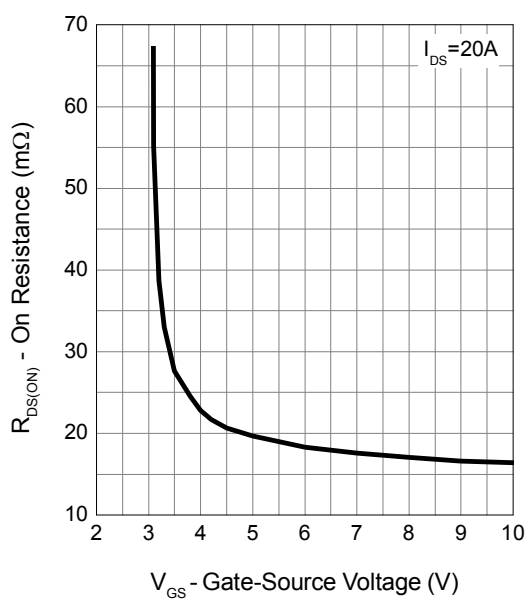
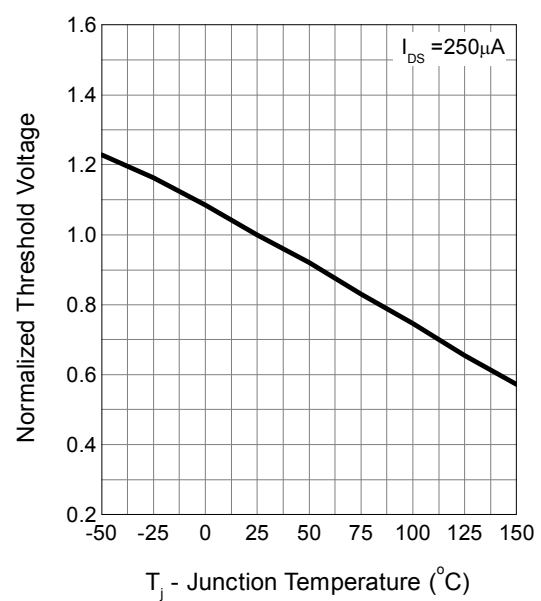
Note d : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

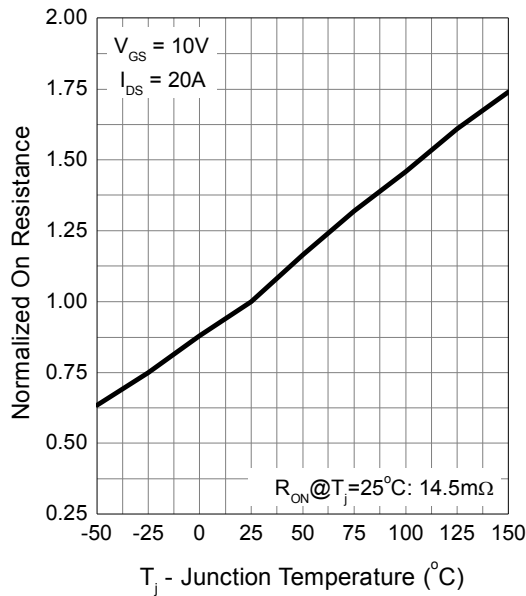
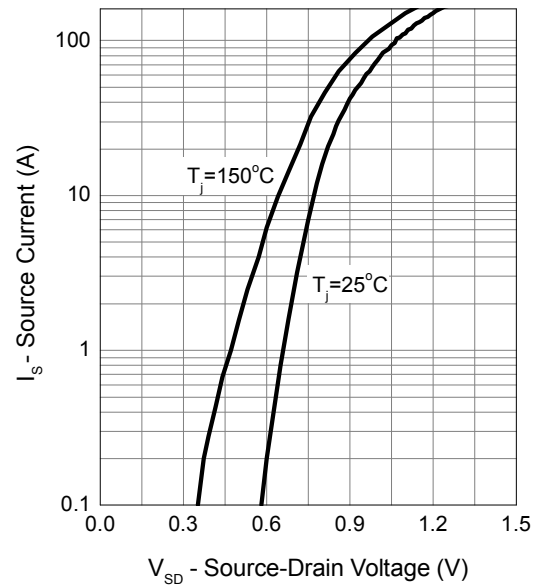
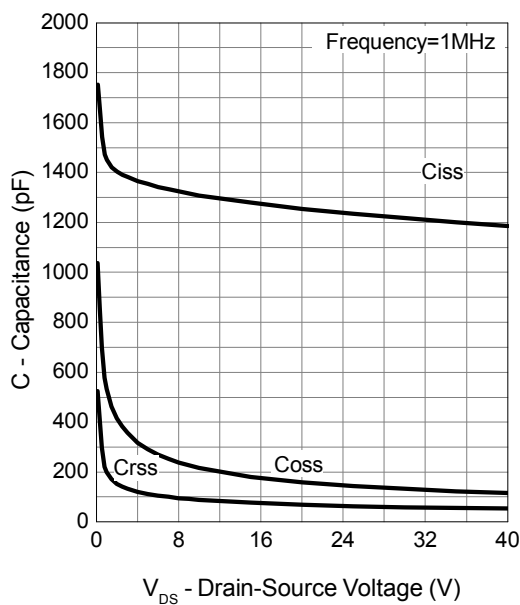
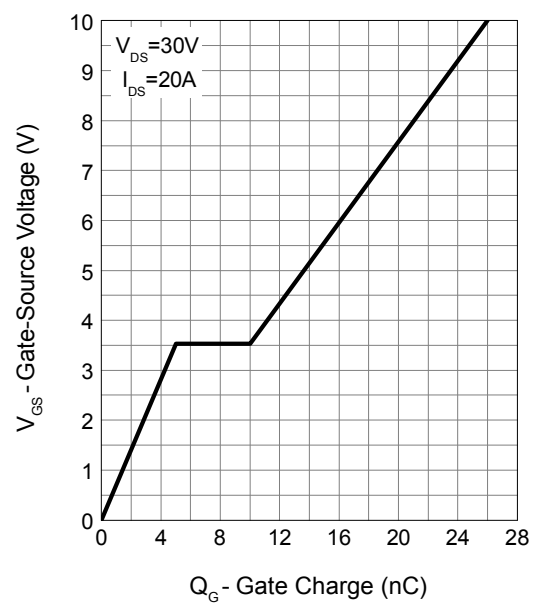
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


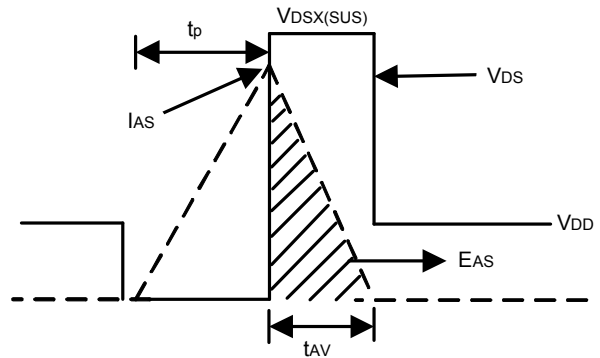
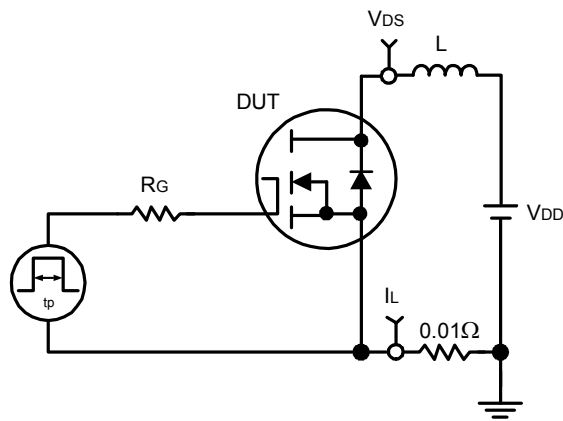
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


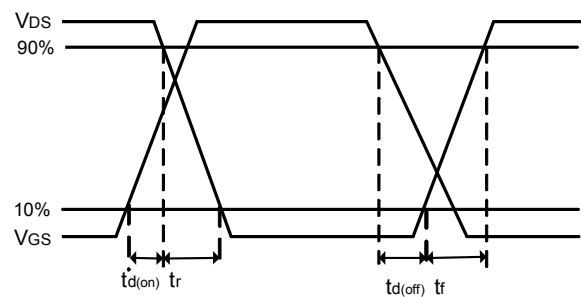
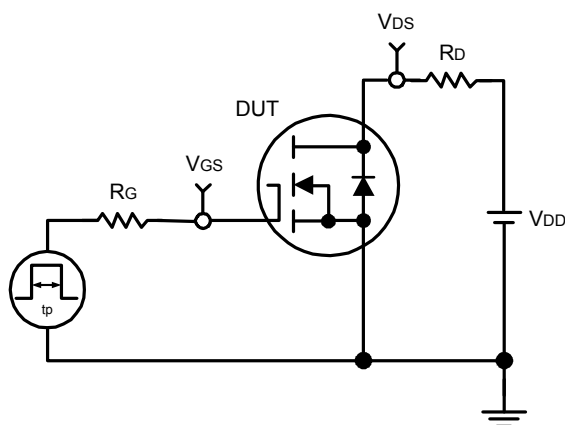
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


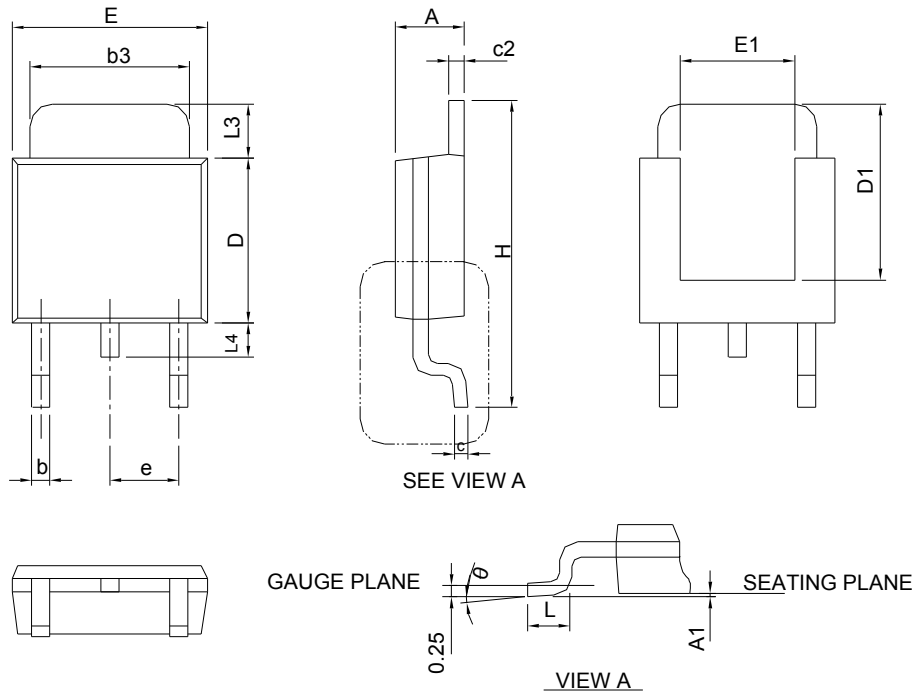
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



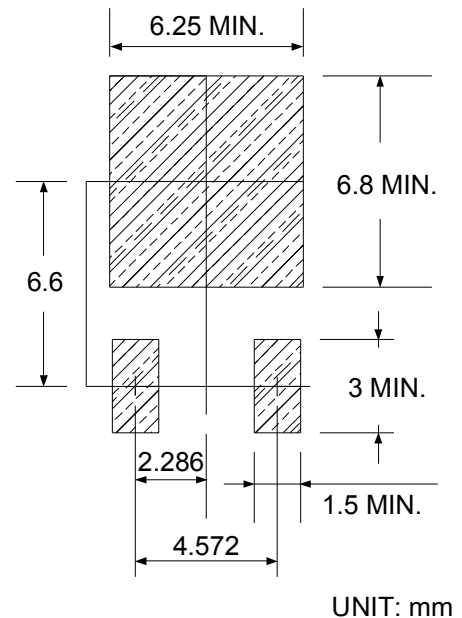
Package Information

TO-252


SYMBOL	TO-252			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.39	0.086	0.094
A1	-	0.13	-	0.005
b	0.50	0.89	0.020	0.035
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.89	0.018	0.035
D	5.33	6.22	0.210	0.245
D1	4.57	6.00	0.180	0.236
E	6.35	6.73	0.250	0.265
E1	3.81	6.00	0.150	0.236
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	0.90	1.78	0.035	0.070
L3	0.89	2.03	0.035	0.080
L4	-	1.02	-	0.040
θ	0°	8°	0°	8°

Note : Follow JEDEC TO-252 .

RECOMMENDED LAND PATTERN



UNIT: mm