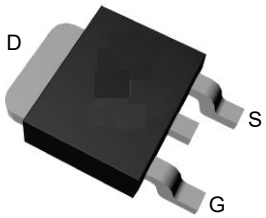
30V, 100A N-Channel Enhancement Mode MOSFET

Features

- V_{DS}= 30V, I_D= 100A
- $R_{DS(ON)}$≤ 4mΩ (2.8mΩ Typ.) @V_{GS}=10V
- $R_{DS(ON)}$≤ 6mΩ (4.5mΩ Typ.) @V_{GS}=4.5V
- Rugged and Reliable
- 100% UIS & R_g Tested
- Lead-Free, RoHS Compliant

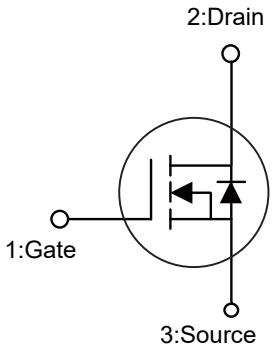
TO-252



Applications

- Power Management for Industrial Converters
- Power Switching Applications
- Hard-Switched and High-Frequency Circuits
- Uninterruptible Power Supply (UPS)
- DC-DC Converters

Schematic Diagram (NMOS)



Mechanical Data

- TO-252 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	
I_D	Continuous Drain Current	Tc=25°C	100	A
		Tc=100°C	75	
I_{DM}[1]	Pulsed Drain Current	Tc=25°C	300	
P_D	Power Dissipation	T_C=25°C	120	W
T_{STG}, T_j	Storage Temperature Range		-55 to 150	℃
I_{AS}[2]	Avalanche Current, Single pulse	L=0.5mH	63	A
E_{AS}[2]	Avalanche Energy, Single pulse	L=0.5mH	992	mJ

Note 1: Pulse width limited by maximum junction temperature.
Note 2: UIS tested and pulse width limited by maximum junction temperature (initial temperature T_j=25°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	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =24V, V_{GS}=0V	-	-	1	μA
		Tj=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_{DS}=250μA	1	-	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$[3]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=20A	-	2.8	4	mΩ
		V_{GS}=4.5V, I_{DS}=15A	-	4.5	6	
Body Diode Characteristics						
V_{SD}[3]	Diode Forward Voltage	I_{SD}=40A, V_{GS}=0V	-	0.7	1.3	V
Dynamic Characteristics[4]						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS} =15V, Frequency=1.0MHz	-	2548	-	pF
C_{oss}	Output Capacitance		-	392	-	
C_{rss}	Reverse transfer capacitance		-	303	-	
$t_{d(ON)}$	Turn-on delay Time	V_{GS}=10V ,V_{DS}=15V R_G=1.8Ω, I_D=20A , R_L=30Ω	-	14	-	nS
t_r	Turn-on rise Time		-	16	-	
$t_{d(OFF)}$	Turn-off delay Time		-	45	-	
t_f	Turn-off rise Time		-	17	-	
Gate Charge Characteristics[4]						
Q_g	Total Gate Charge	V_{DS} =15V, V_{GS}=10V, I_{DS}=20A	-	69.3	-	
Q_{gs}	Gate-Source Charge		-	8.3	-	
Q_{gd}	Gate-Drain Charge		-	18.6	-	

Note 3：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note 4：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics (T_A=25°C unless otherwise noted)

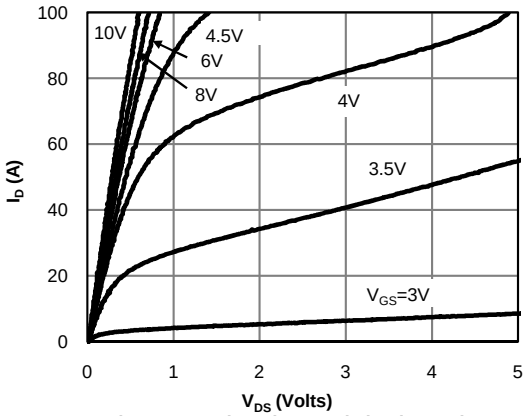


Fig 1: On-Region Characteristics (Note E)

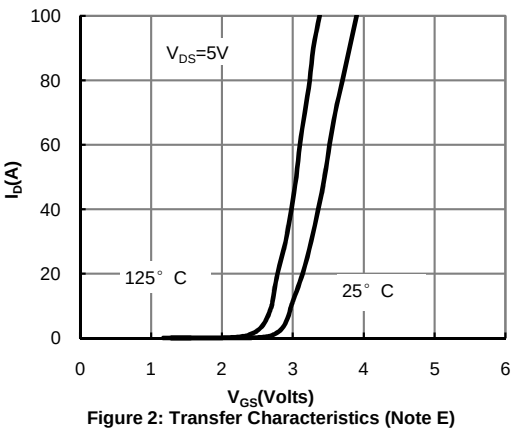


Figure 2: Transfer Characteristics (Note E)

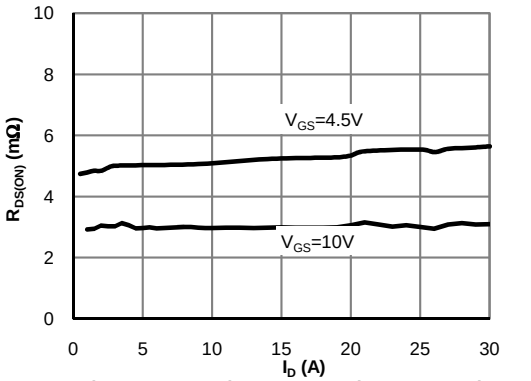


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

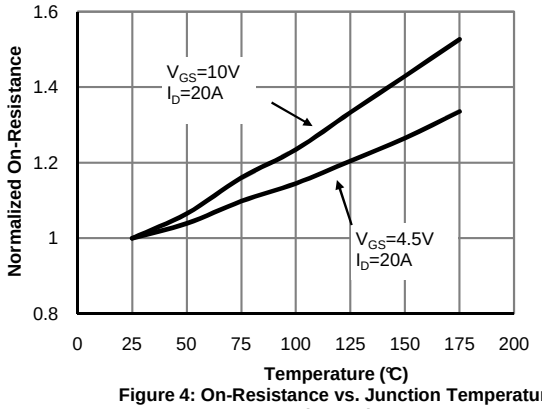


Figure 4: On-Resistance vs. Junction Temperature (Note E)

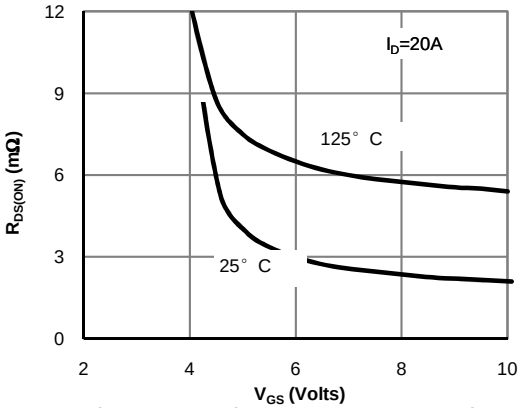


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

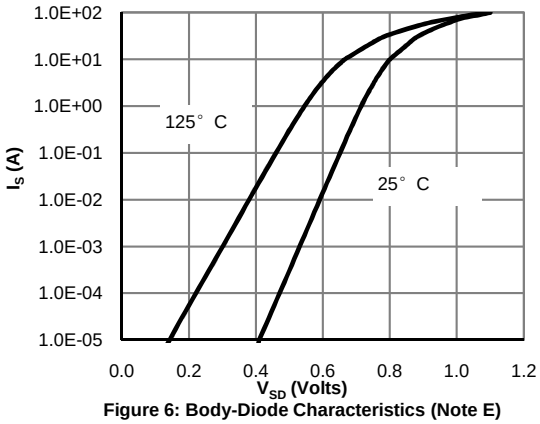


Figure 6: Body-Diode Characteristics (Note E)

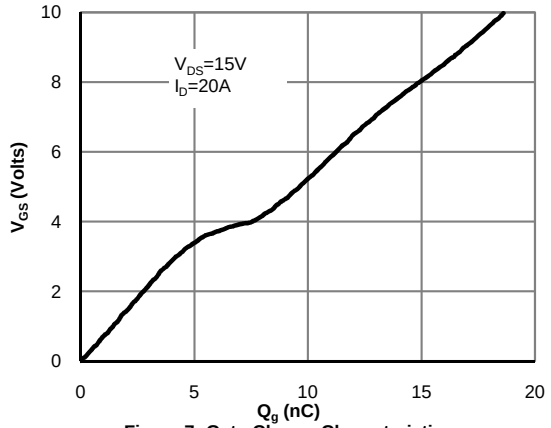


Figure 7: Gate-Charge Characteristics

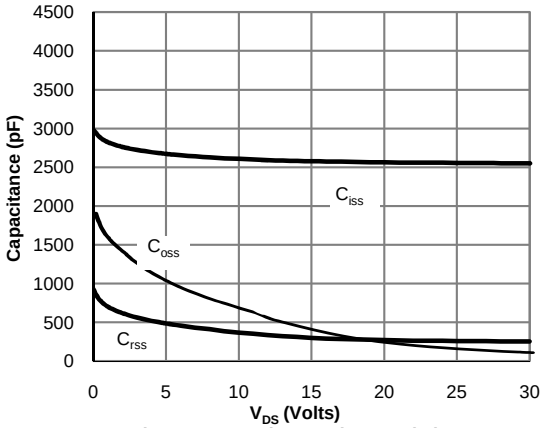


Figure 8: Capacitance Characteristics

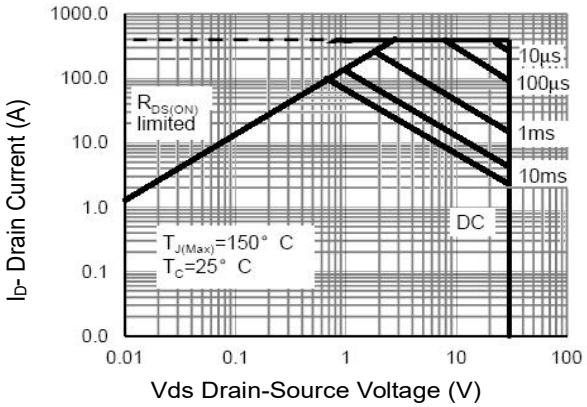


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

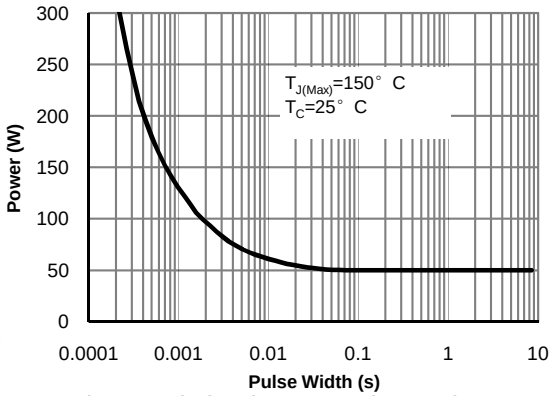


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

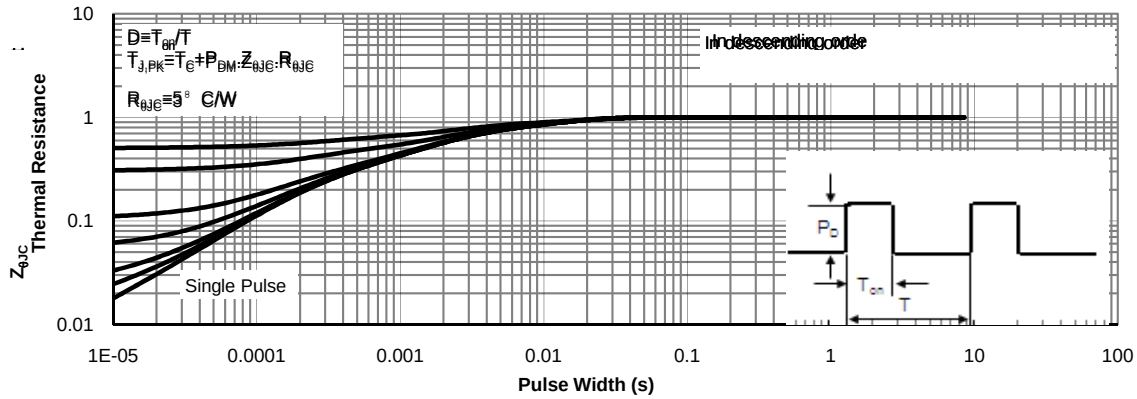
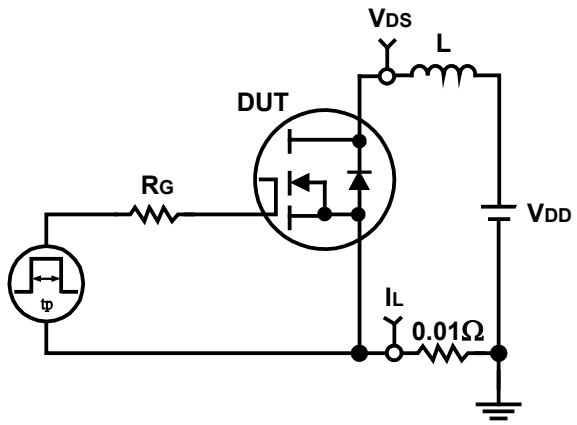
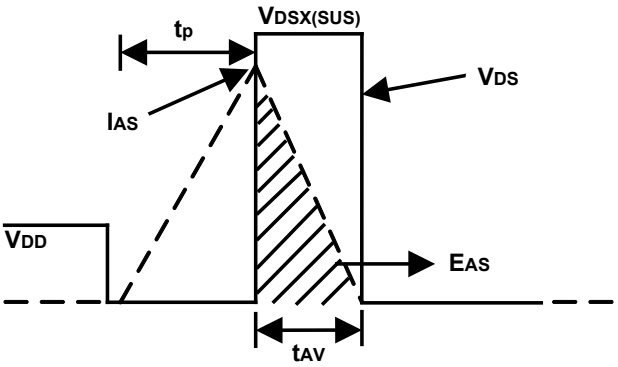


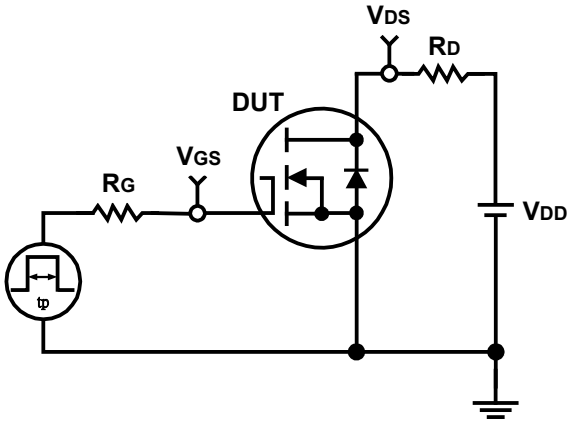
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

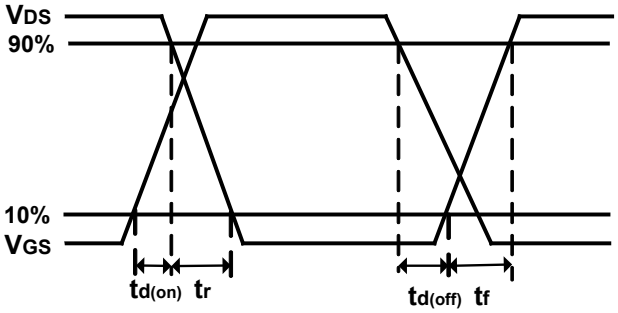
Avalanche Test Circuit and Waveforms



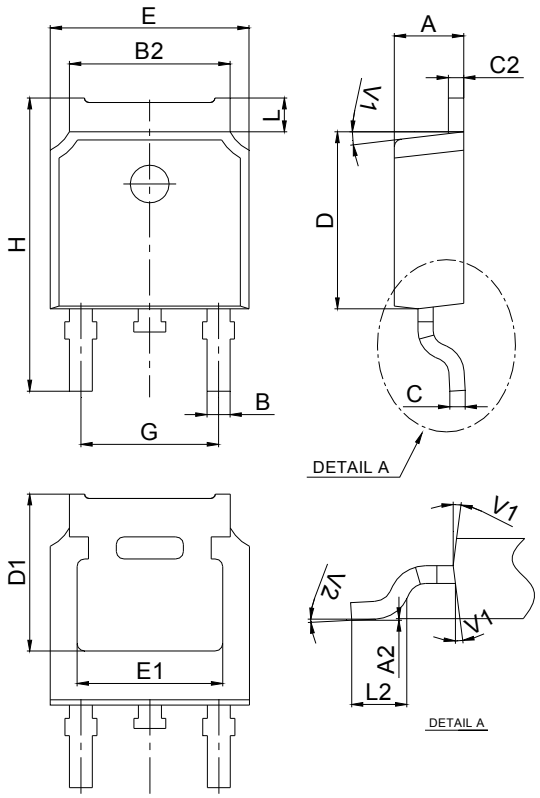


Switching Time Test Circuit and Waveforms





Package Outline Dimensions (TO-252)



Symbol	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°