

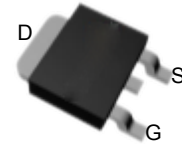
Features

- 30V/80A,
 $R_{DS(ON)} = 4m\Omega$ (typ.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 6m\Omega$ (typ.) @ $V_{GS} = 4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- 100% UIS + R_g Tested

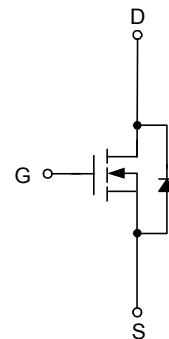
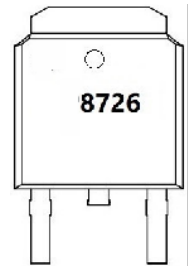
Applications

- Power Management in LCD TV Inverter.

Pin Description



Top View of TO-252-2



N-Channel MOSFET

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

Symbol	Parameter	Rating	Unit
Common Ratings			
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	
		$T_C=100^\circ\text{C}$	
I_{DM}	Pulsed Drain Current	$T_C=25^\circ\text{C}$	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	W
		$T_C=100^\circ\text{C}$	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	1.6 $^\circ\text{C/W}$
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$	A
		$T_A=70^\circ\text{C}$	
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$	W
		$T_A=70^\circ\text{C}$	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$	$^\circ\text{C/W}$
		Steady State	
I_{AS}^c	Avalanche Current, Single pulse	$L=0.1\text{mH}$	A
E_{AS}^c	Avalanche Energy, Single pulse	$L=0.1\text{mH}$	mJ

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 $T_J=25^\circ\text{C}$).

Electrical Characteristics (T_A = 25°C unless otherwise noted)

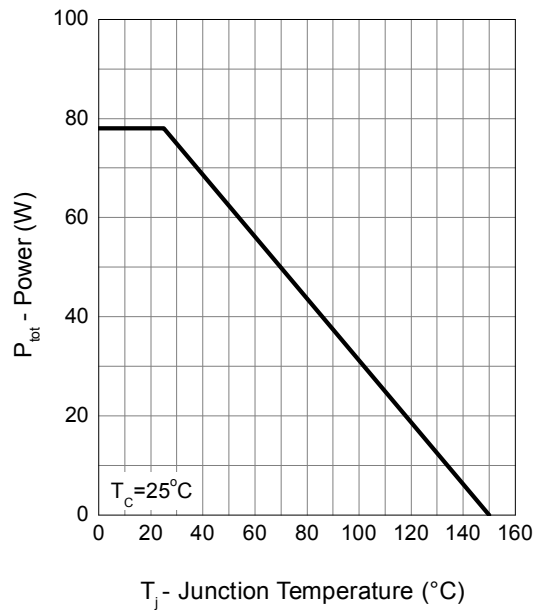
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	1.0	1.5	2.0	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^c	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-25A	-	4	5.5	mΩ
		V _{GS} =-4.5V, I _{DS} =-20A	-	6	6.8	
Diode Characteristics						
V _{SD} ^c	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	-	30	-	ns
Q _{rr}	Reverse Recovery Charge		-	20	-	nC
Dynamic Characteristics ^d						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz	-	1875	-	pF
C _{oss}	Output Capacitance		-	325	-	
C _{rss}	Reverse Transfer Capacitance		-	162	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, R _L =15Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	18	-	ns
t _r	Turn-on Rise Time		-	16	-	
t _{d(OFF)}	Turn-off Delay Time		-	40	-	
t _f	Turn-off Fall Time		-	11	-	
Gate Charge Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _{DS} =-25A	-	31	-	nC
Q _{gs}	Gate-Source Charge		-	3.75	-	
Q _{gd}	Gate-Drain Charge		-	9	-	

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

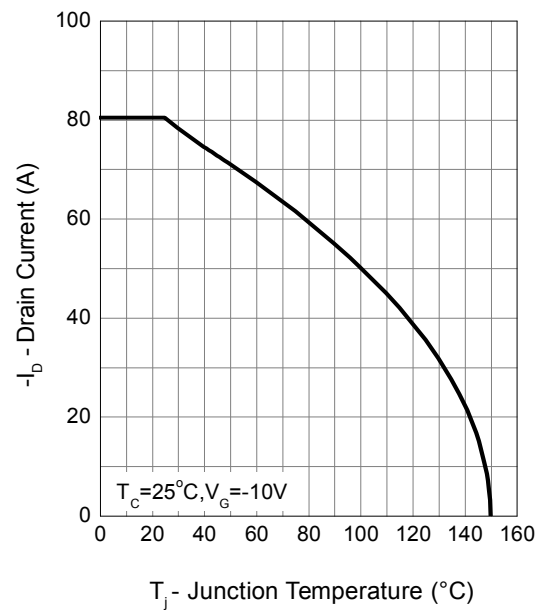
Note d Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

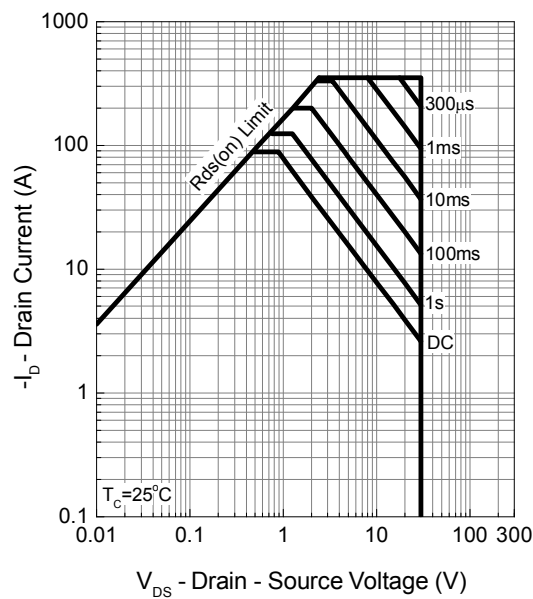
Power Dissipation



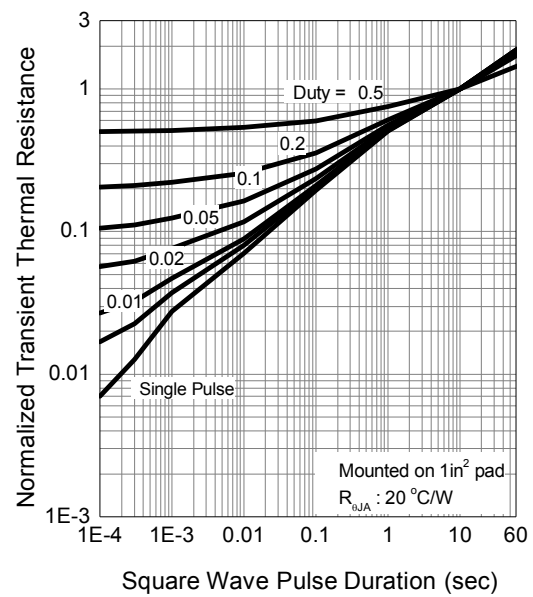
Drain Current



Safe Operation Area

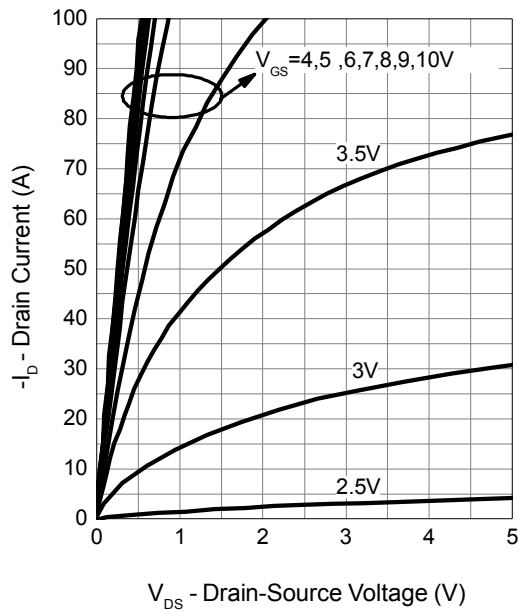


Thermal Transient Impedance

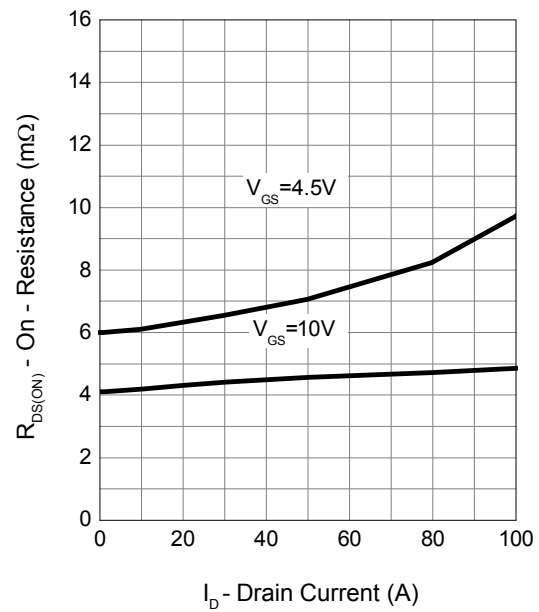


Typical Operating Characteristics (Cont.)

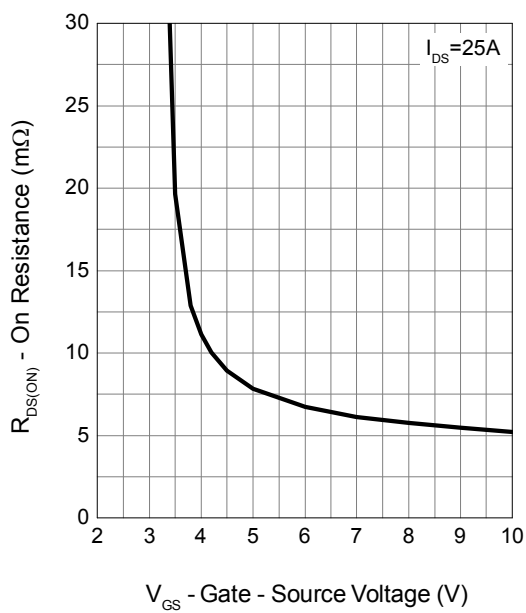
Output Characteristics



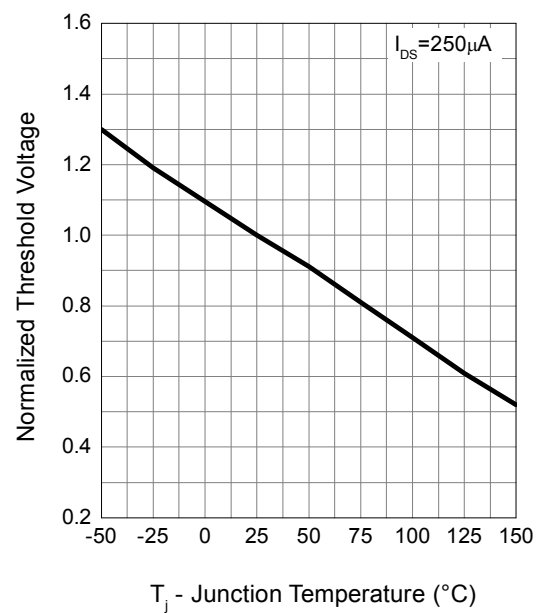
Drain-Source On Resistance



Gate-Source On Resistance

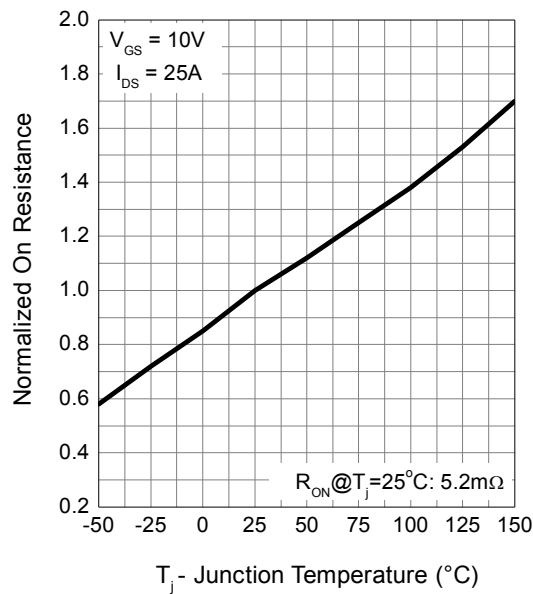


Gate Threshold Voltage

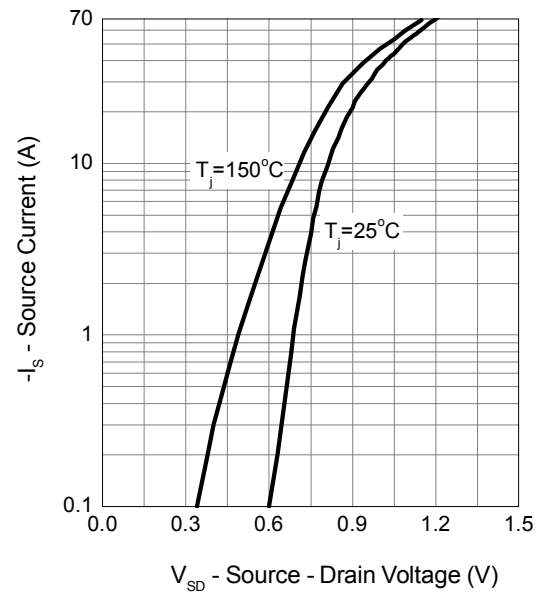


Typical Operating Characteristics (Cont.)

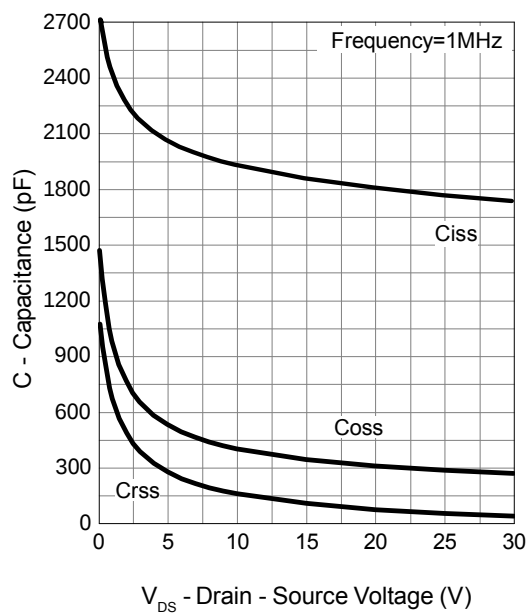
Drain-Source On Resistance



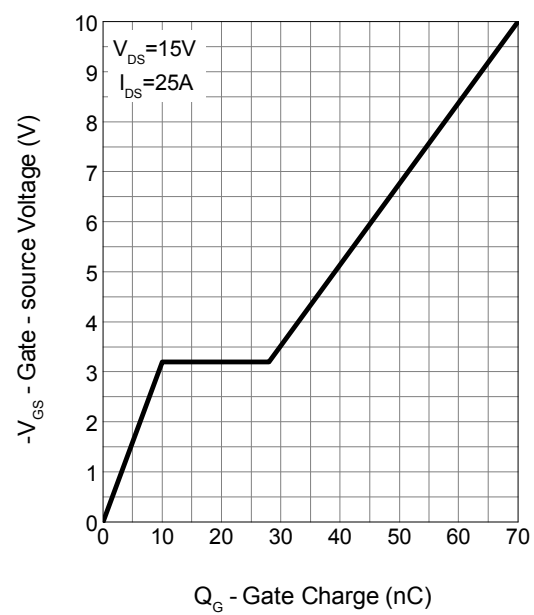
Source-Drain Diode Forward



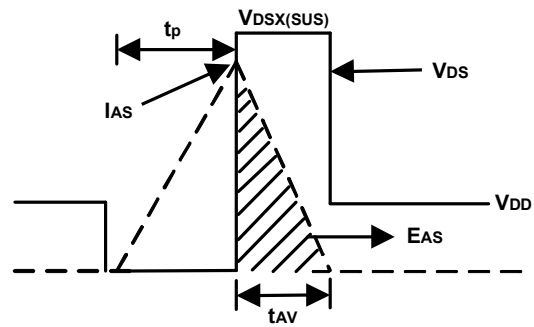
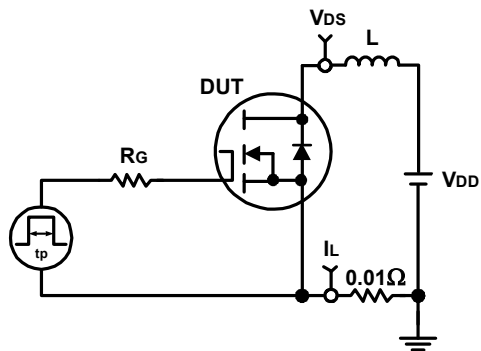
Capacitance



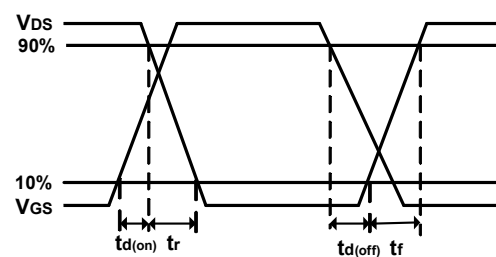
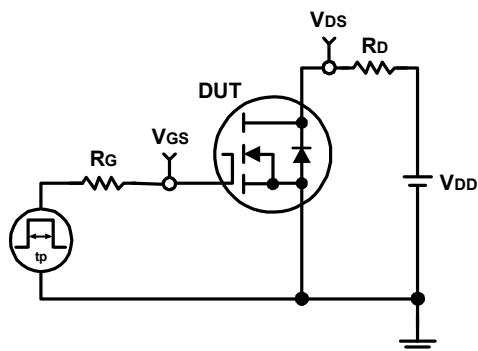
Gate Charge



Avalanche Test Circuit and Waveforms

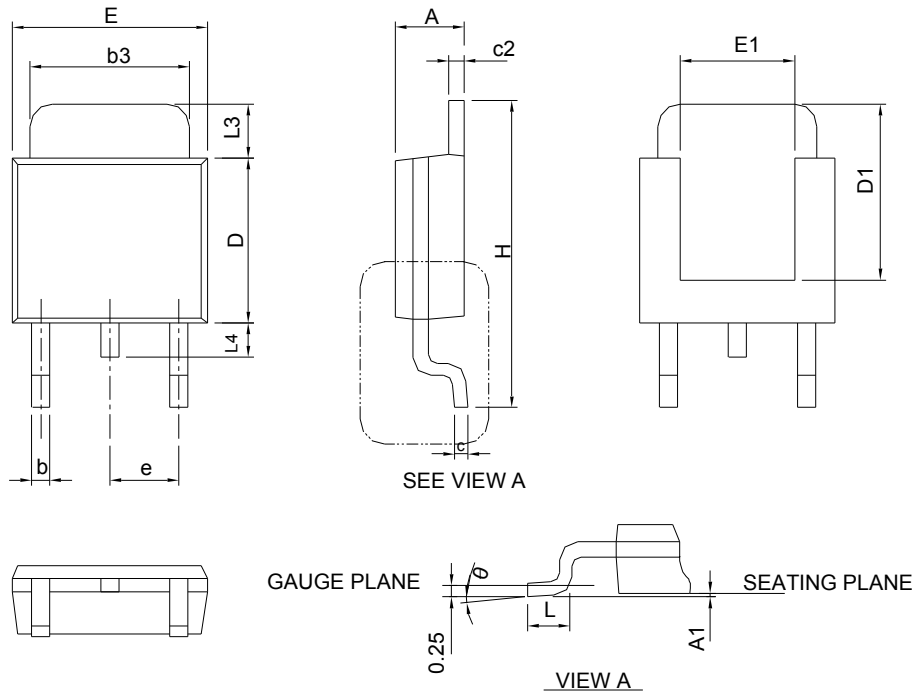


Switching Time Test Circuit and Waveforms



Package Information

TO-252-2



SYMBOL	TO-252-2			
	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

