Features

- 200V/5.8A,
  $R_{DS(ON)}$= 600mΩ (max.) @ V_{GS}=10V
  $R_{DS(ON)}$ = 620mΩ (max.)@ V_{GS}=4.5V
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- High Efficiency Synchronous Rectification in SMPS.
- Uninterruptible Power Supply.
- High Speed Power Switching.
- Hard Switched and High Frequency Circuits.

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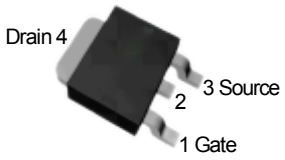
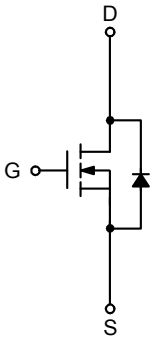
Pin Description



Top View of TO-252-2



N-Channel MOSFET

Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V	5.8	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	3.7	A
I_{DM}	Pulsed Drain Current[1]	20	A
P_D@T_C=25℃	Total Power Dissipation	44.6	W
P_D@T_A=25℃	Total Power Dissipation	2	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-c	Maximum Thermal Resistance, Junction-case	2.8	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount)[3]	62.5	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient	110	℃/W

Note a: Bond wire current limit is 5.8A.

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

Note c: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature Tj=25°C).

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	200	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=5A	-	-	600	mΩ
		V_{GS}=4.5V, I_D=2A	-	-	620	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	-	3	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=5A	-	7	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=160V, V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=5A	-	30	48	nC
Q_{gs}	Gate-Source Charge	V_{DS}=160V	-	3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=10V	-	11.5	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DD}=100V	-	6	-	ns
t_r	Rise Time	I_D=5A	-	8.5	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω	-	30	-	ns
t_f	Fall Time	V_{GS}=10V	-	5	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	530	850	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	70	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	35	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD} :	Forward On Voltage[2]	I_S=5A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=5A, V_{GS}=0V,	-	190	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	1.6	-	uC

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

Typical Operating Characteristics

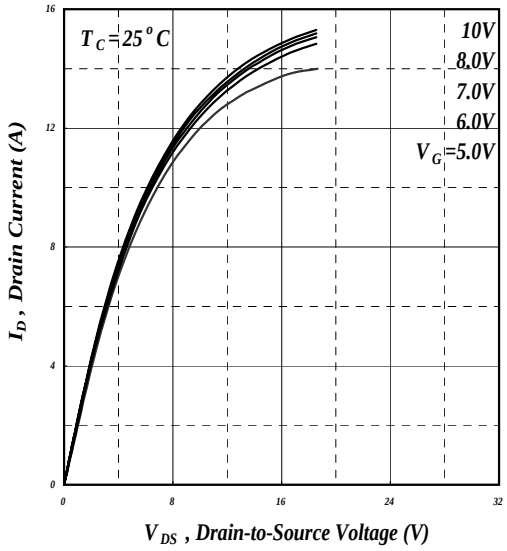


Fig 1. Typical Output Characteristics

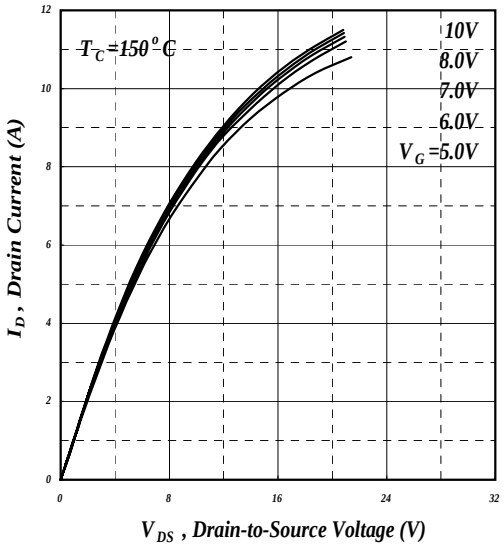


Fig 2. Typical Output Characteristics

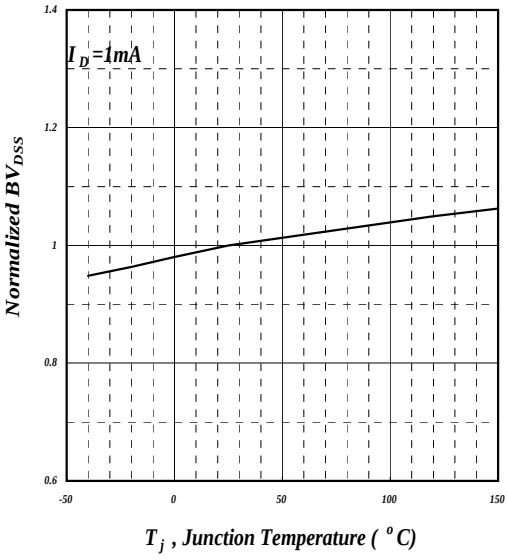


Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

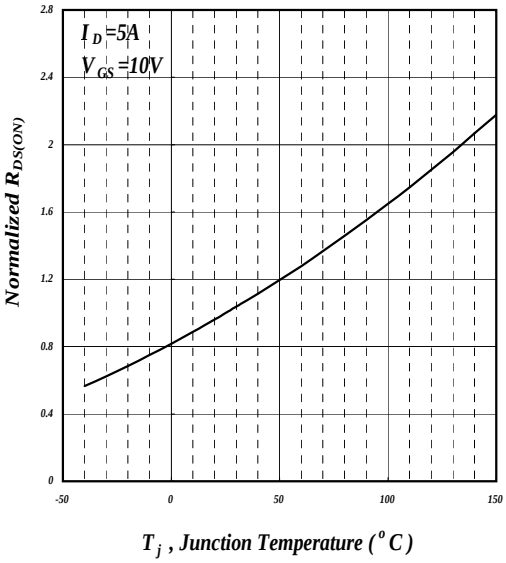


Fig 4. Normalized On-Resistance v.s. Junction Temperature

Typical Operating Characteristics (Cont.)

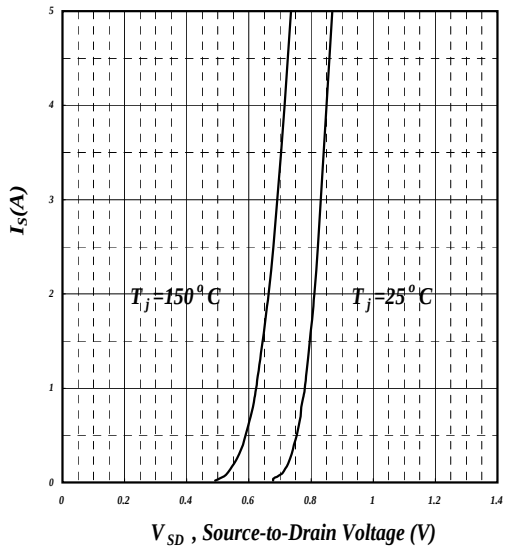


Fig 5. Forward Characteristic of Reverse Diode

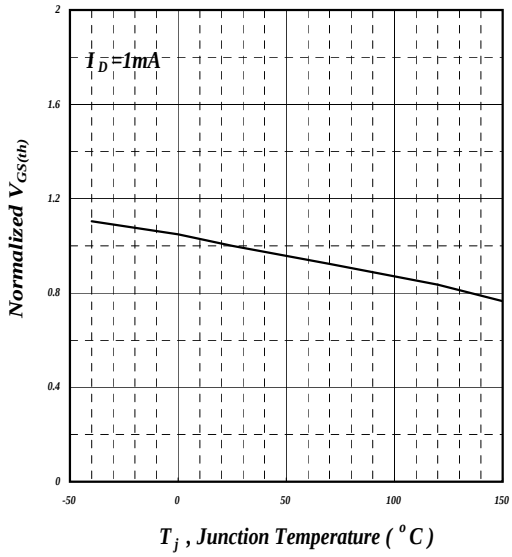


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

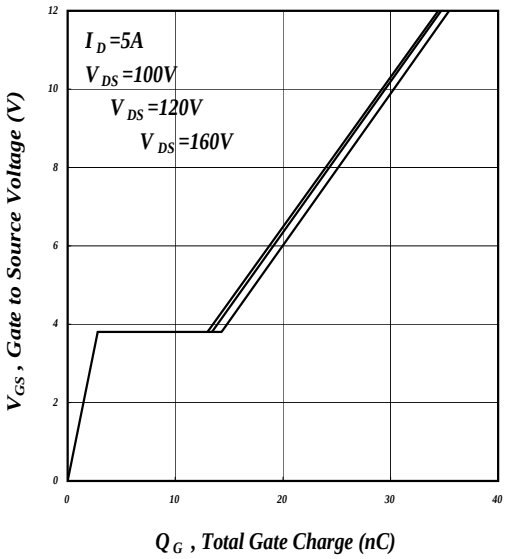


Fig 7. Gate Charge Characteristics

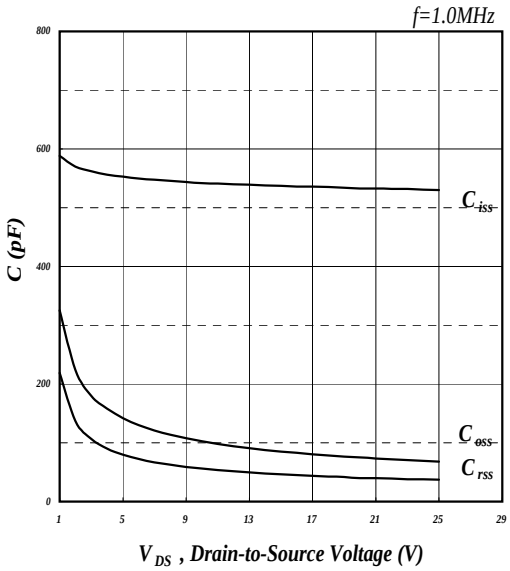


Fig 8. Typical Capacitance Characteristics

Typical Operating Characteristics (Cont.)

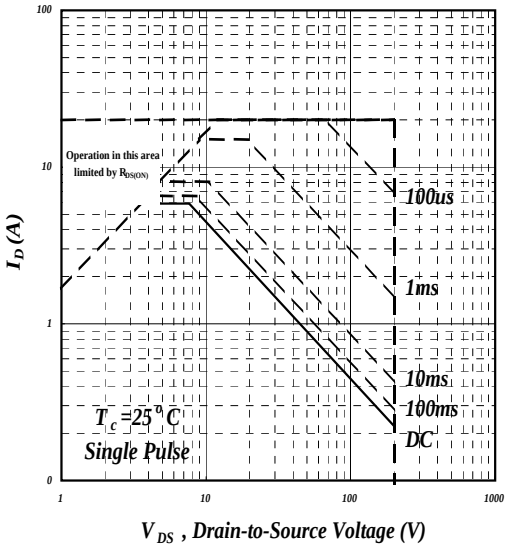


Fig 9. Maximum Safe Operating Area

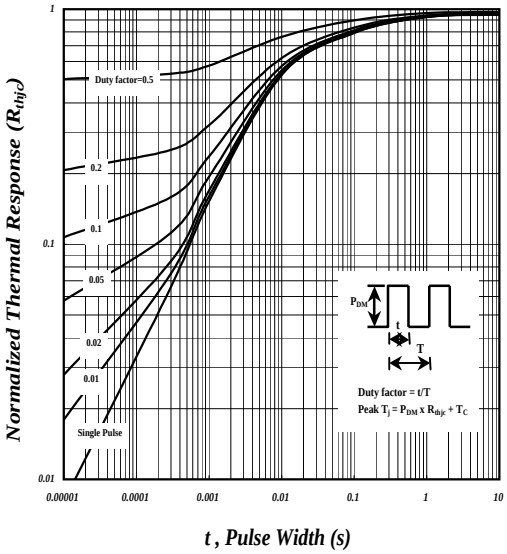


Fig10. Effective Transient Thermal Impedance

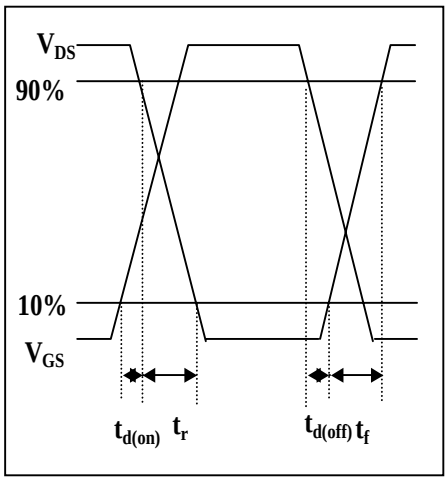


Fig 11. Switching Time Waveform

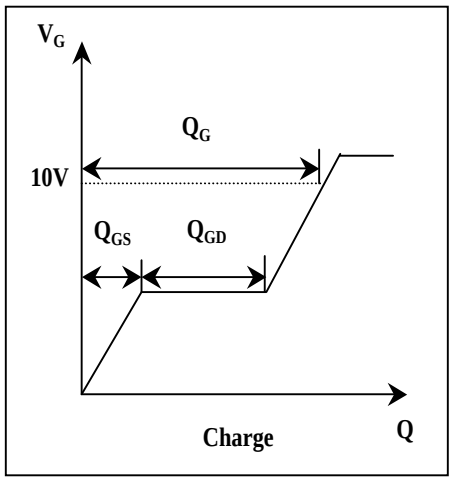
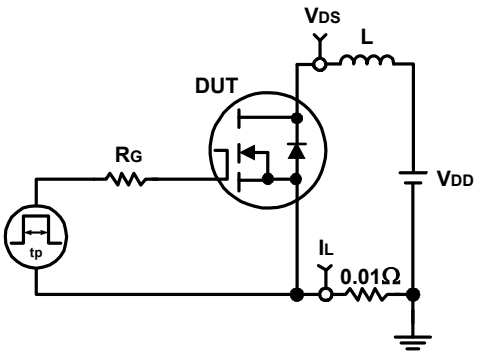
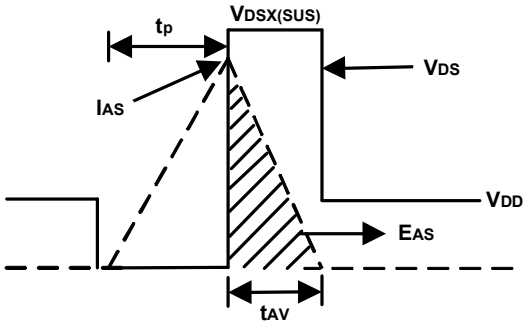


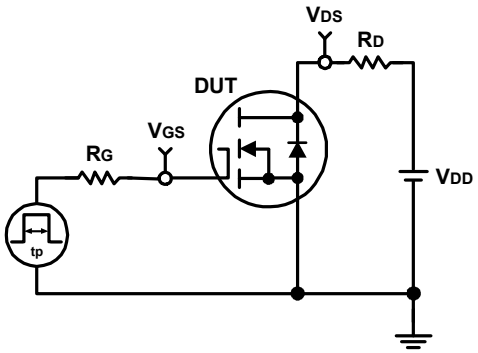
Fig 12. Gate Charge Waveform

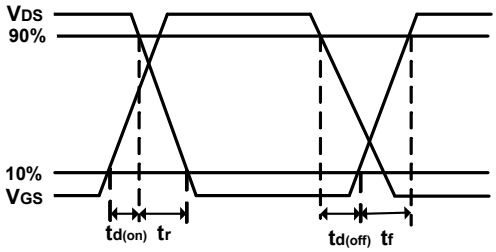
Avalanche Test Circuit and Waveforms





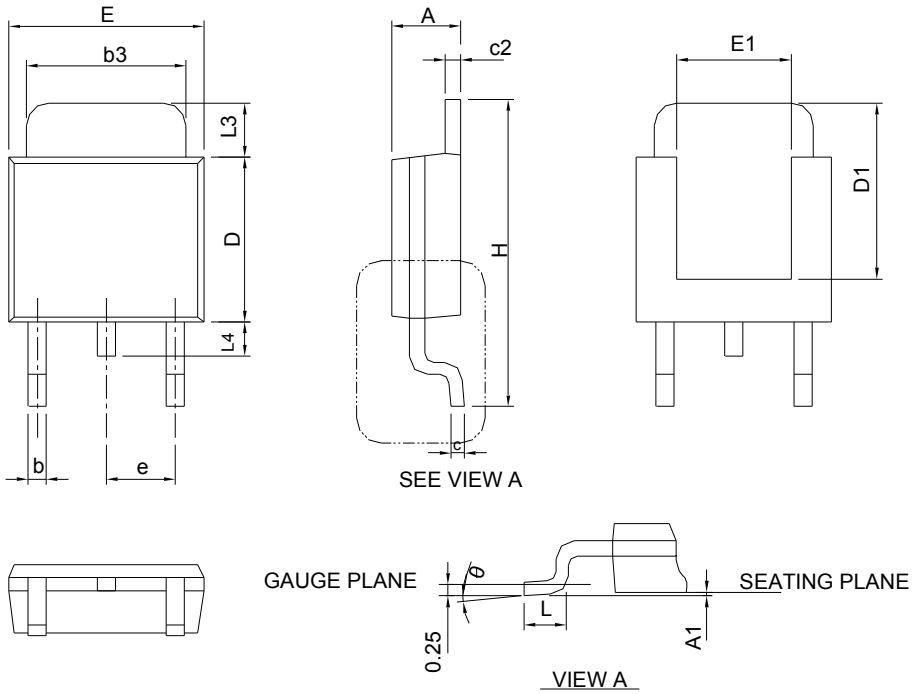
Switching Time Test Circuit and Waveforms





Package Information

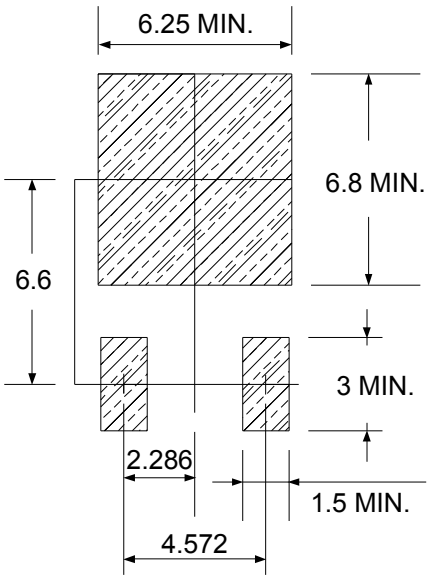
TO-252-2



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-252-2 .

RECOMMENDED LAND PATTERN



UNIT: mm