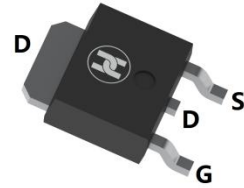
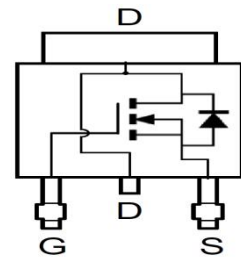


**N-CHANNEL HIGH VOLTAGE MOSFET**
**FEATURES**

- $V_{DS}=100V, R_{DS(ON)} \leq 350m\Omega @ V_{GS}=10V, I_D=3.5A$
- Low input capacitance
- Low on-resistance
- Fast switching speed
- For Power Management Functions and DC-DC Converters Applications
- For Disconnect switches and Motor control Applications
- For Uninterrupted power supply Applications
- Surface Mount device


**TO-252**
**MECHANICAL DATA**

- Case: TO-252
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.33 grams (approximate)


**MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$  unless otherwise noted)**

Parameter		Symbol	Value	Unit
Drain-source voltage		$V_{DS}$	100	V
Gate-source voltage		$V_{GS}$	$\pm 20$	V
Continuous drain current, $V_{GS} = 10V$	$T_c = +25^\circ\text{C}$ (NOTE2)	$I_D$	3.5	A
	$T_c = +70^\circ\text{C}$ (NOTE2)		2.8	
	$T_c = +25^\circ\text{C}$ (NOTE1)		2.4	
Pulsed drain current ( $V_{GS}=10V$ , Note3)		$I_{DM}$	9.9	A
Continuous Source current (Body diode)(Note2)		$I_S$	8.4	A
Pulsed Source current (Body diode)(Note3)		$I_{SM}$	9.9	A
Power dissipation	NOTE 1	$P_D$	4.06	W
	NOTE 2		8.5	
	NOTE 5		2.11	
Thermal resistance from Junction to ambient	NOTE 1	$R_{\theta JA}$	30.8	$^\circ\text{C}/\text{W}$
	NOTE 2		14.7	
	NOTE 5		59.1	
Thermal Resistance, Junction to Case (NOTE4)		$R_{\theta JL}$	1.10	$^\circ\text{C}/\text{W}$
Operating and Storage temperature		$T_J, T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Notes:1. For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions; the device is measured when operating in a steady-state condition.

2. Same as note 1, except the device is measured at  $t \leq 10$  sec.

3. Same as note 1, except the device is pulsed with  $D = 0.02$  and pulse width 300  $\mu\text{s}$ . The pulse current is limited by the maximum junction temperature.

4. Thermal resistance from junction to solder-point (at the end of the drain lead).

5. For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with the high coverage single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.

**N-CHANNEL HIGH VOLTAGE MOSFET**
**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
<b>OFF CHARACTERISTICS</b>						
Drain-Source breakdown voltage	V <sub>(BR)DSS</sub>	100			V	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA
Zero gate voltage drain current	I <sub>DSS</sub>			1	μA	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V
Gate-body leakage current	I <sub>GSS</sub>			±100	nA	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V
<b>ON CHARACTERISTICS</b>						
Gate-threshold voltage	V <sub>GS(th)</sub>	2		4	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA
Drain-source on-resistance (Note 6)	R <sub>DS(ON)</sub>			350	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =2.6A
				450	mΩ	V <sub>GS</sub> =6V, I <sub>D</sub> =1.3A
Forward Trans-conductance (Note 6 &7)	g <sub>fs</sub>		4		S	V <sub>DS</sub> =15V, I <sub>D</sub> =2.6A
Diode forward voltage (Note 6)	V <sub>SD</sub>		0.85	0.95	V	I <sub>S</sub> =1.85A, V <sub>GS</sub> =0V
Body Diode Reverse Recovery Time(Note7)	t <sub>rr</sub>		26		nS	I <sub>S</sub> =1.0A, di/dt= 100A/μs
Body Diode Reverse Recovery Charge(Note7)	Q <sub>rr</sub>		30		nC	
<b>DYNAMIC CHARACTERISTICS(Note7)</b>						
Input capacitance	C <sub>iss</sub>		274		pF	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1MHz
Output capacitance	C <sub>oss</sub>		21		pF	
Reverse transfer capacitance	C <sub>rss</sub>		11		pF	
Total Gate Charge(Note8)	Q <sub>g</sub>		3.5		nC	V <sub>DS</sub> =50V, V <sub>GS</sub> =6V, I <sub>D</sub> =2.5A
Total gate charge(Note8)	Q <sub>g</sub>		5.4		nC	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =2.5A
Gate-source charge(Note8)	Q <sub>gs</sub>		1.4		nC	
Gate-drain charge(Note8)	Q <sub>gd</sub>		1.5		nC	
Turn-on delay time(Note8)	t <sub>d(on)</sub>		2.7		nS	V <sub>DD</sub> =50V, V <sub>GS</sub> =10V I <sub>D</sub> =1.0A, R <sub>g</sub> =6Ω
Turn-on rise time(Note8)	t <sub>r</sub>		1.7		nS	
Turn-off delay time(Note8)	t <sub>d(off)</sub>		7.4		nS	
Turn-off fall time(Note8)	t <sub>f</sub>		3.5		nS	

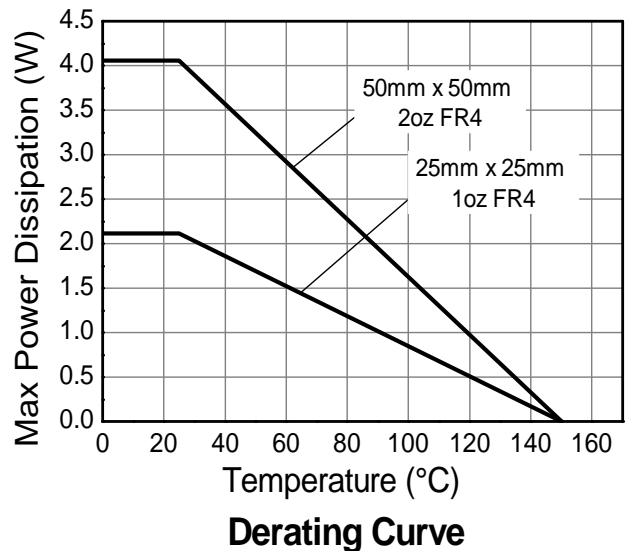
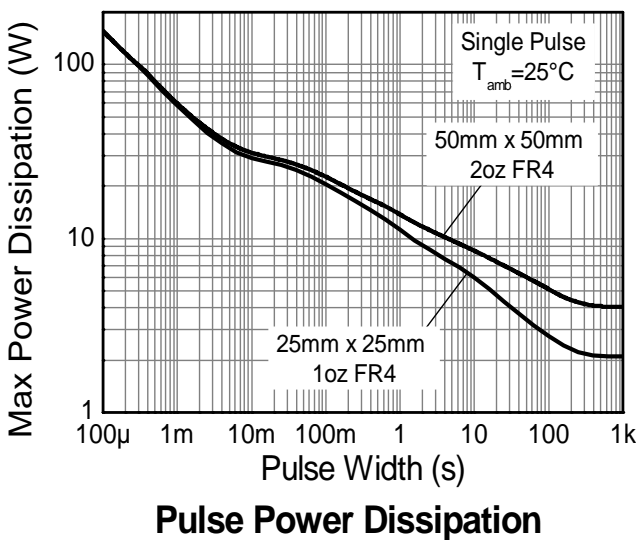
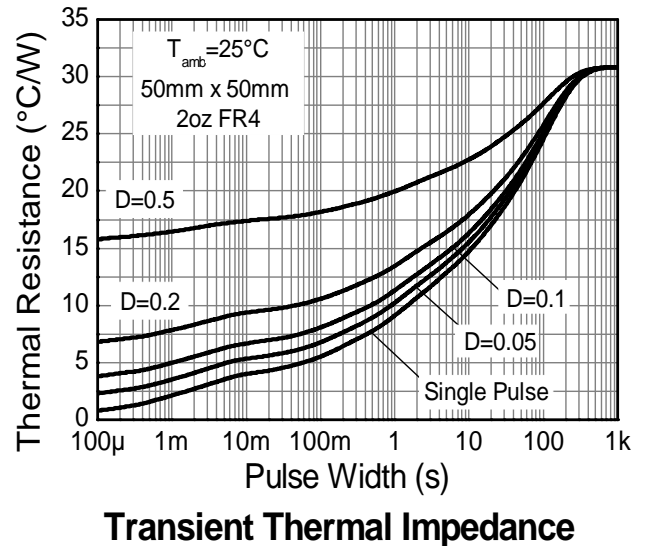
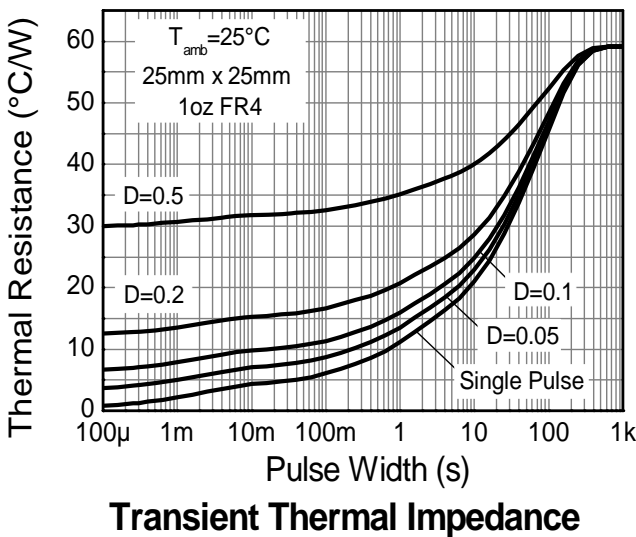
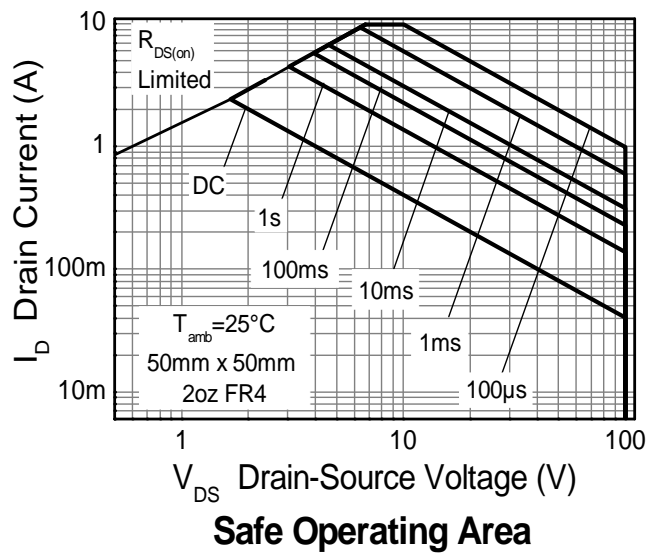
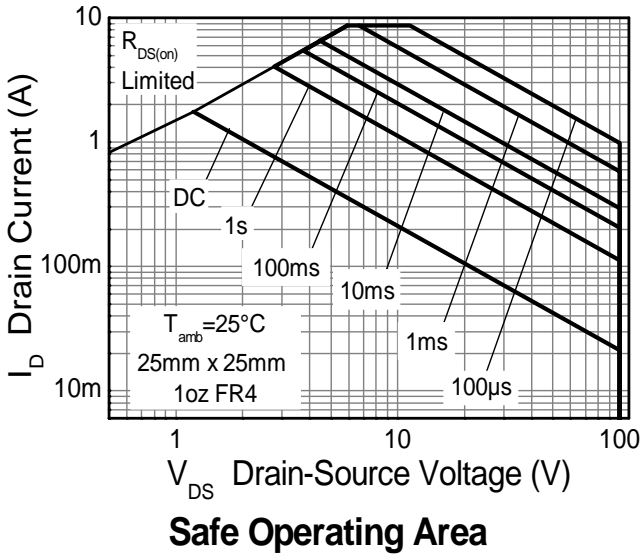
Notes: 6. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%

7. For design aid only, not subject to production testing.

8. Switching characteristics are independent of operating junction temperatures.

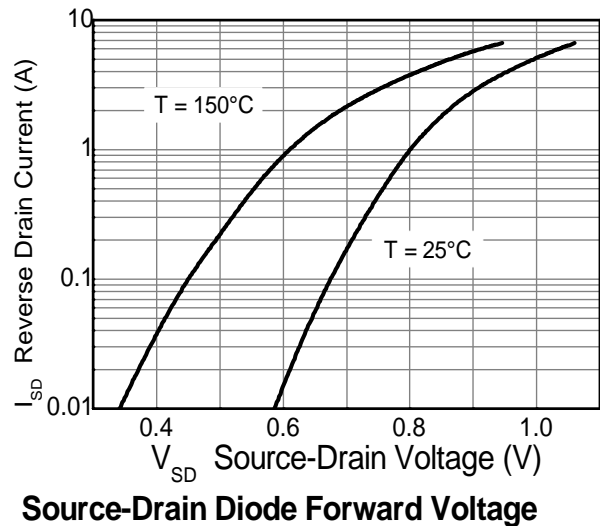
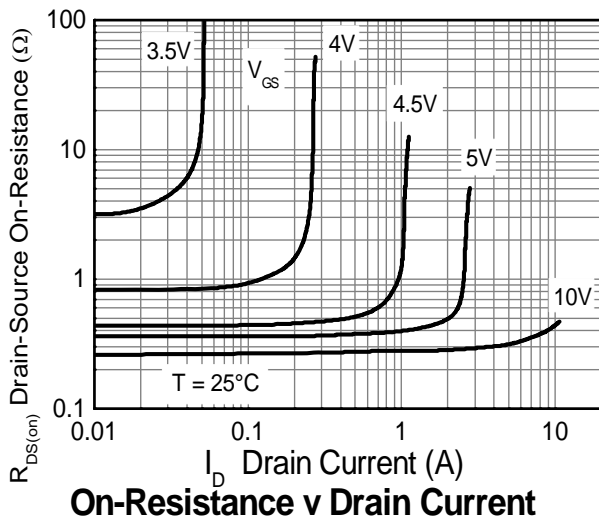
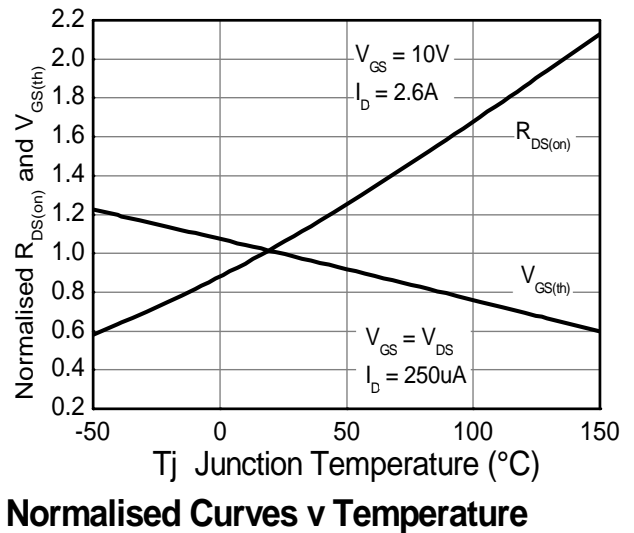
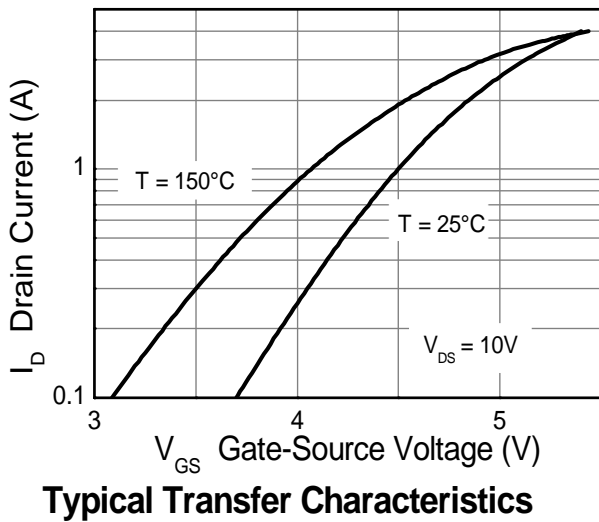
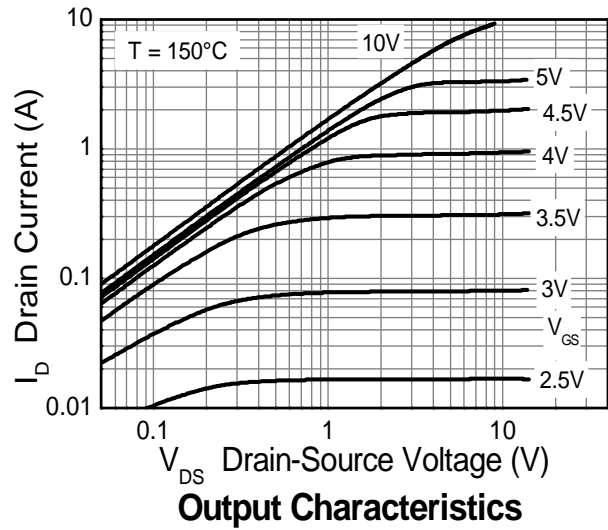
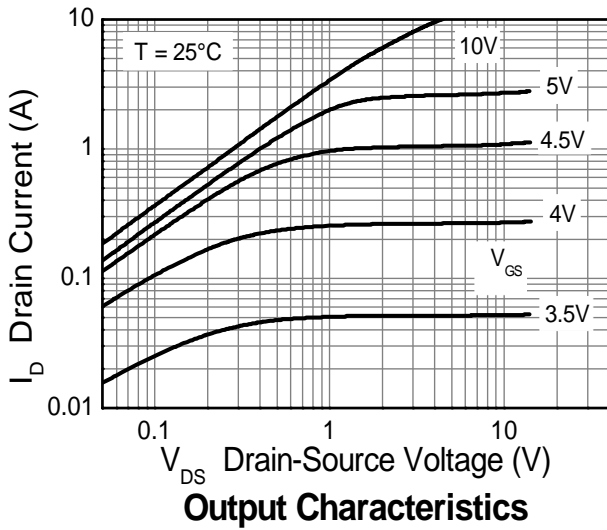
**N-CHANNEL HIGH VOLTAGE MOSFET**

**Thermal Characteristics**



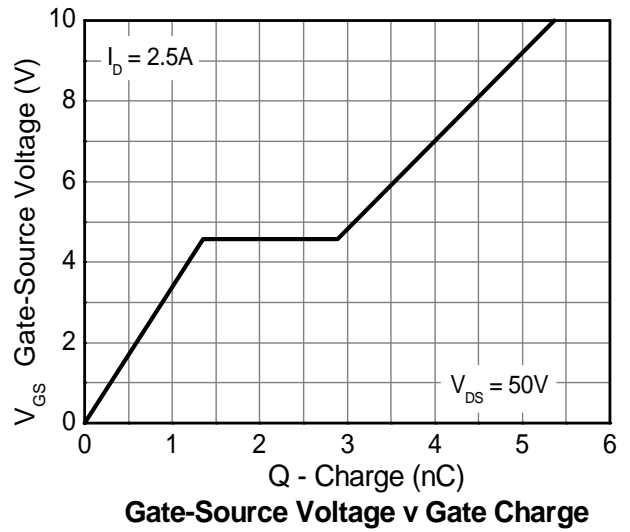
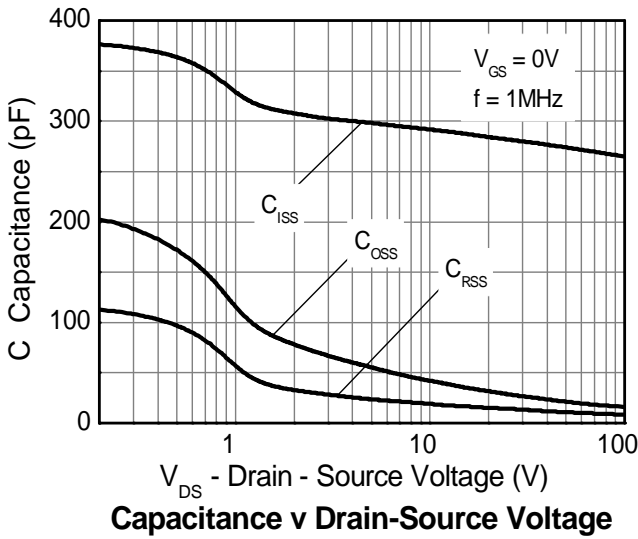
**N-CHANNEL HIGH VOLTAGE MOSFET**

**Typical Characteristics**

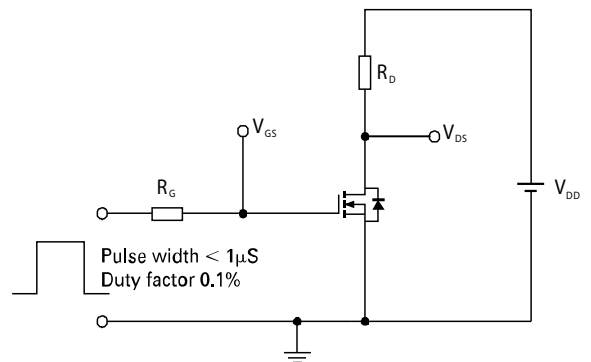
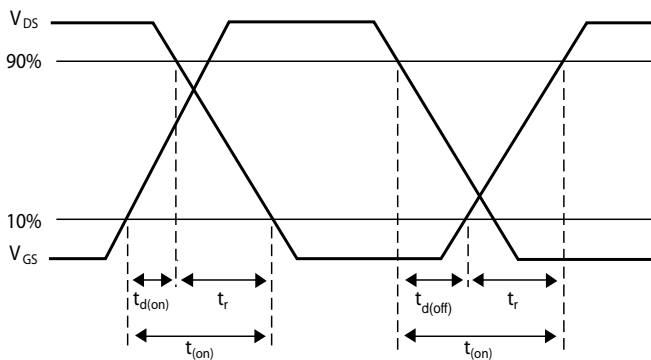
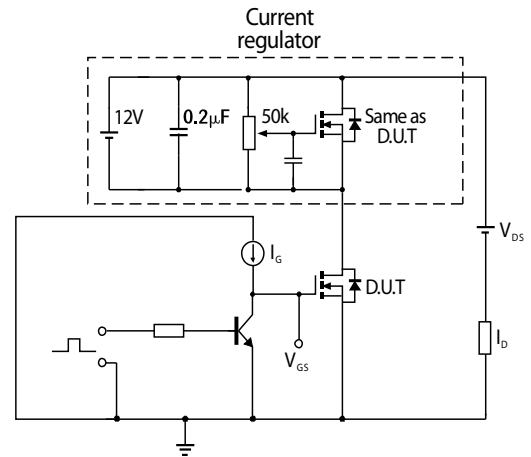
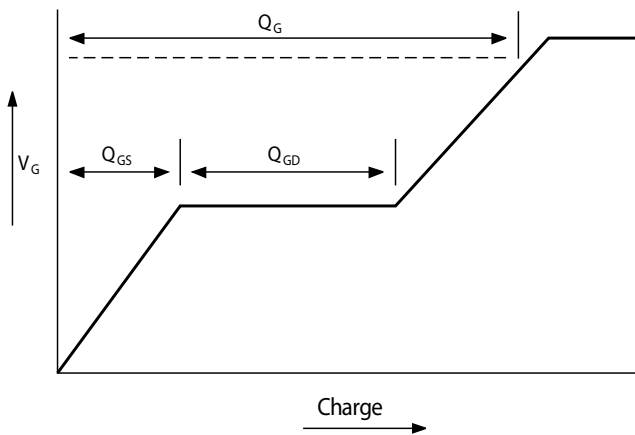


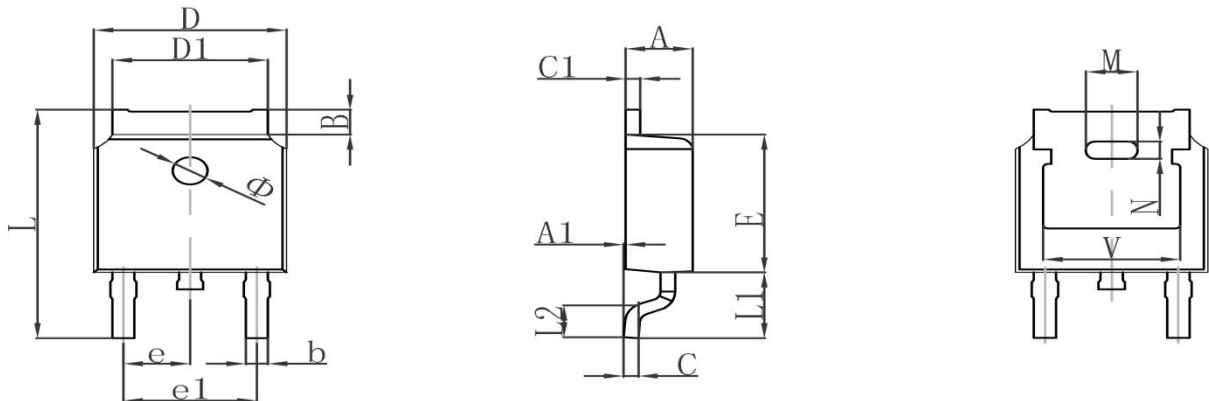
**N-CHANNEL HIGH VOLTAGE MOSFET**

**Typical Characteristics - continued**

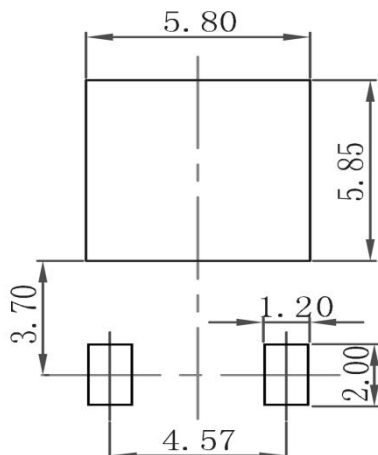


**Test Circuits**

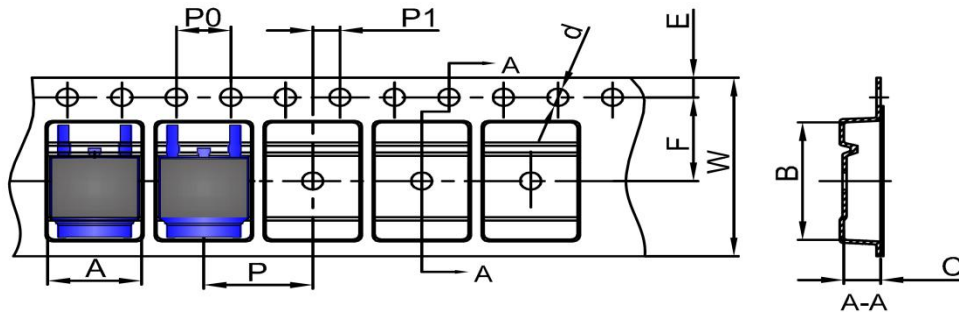


**N-CHANNEL HIGH VOLTAGE MOSFET**
**TO-252 Package Outline Dimensions**


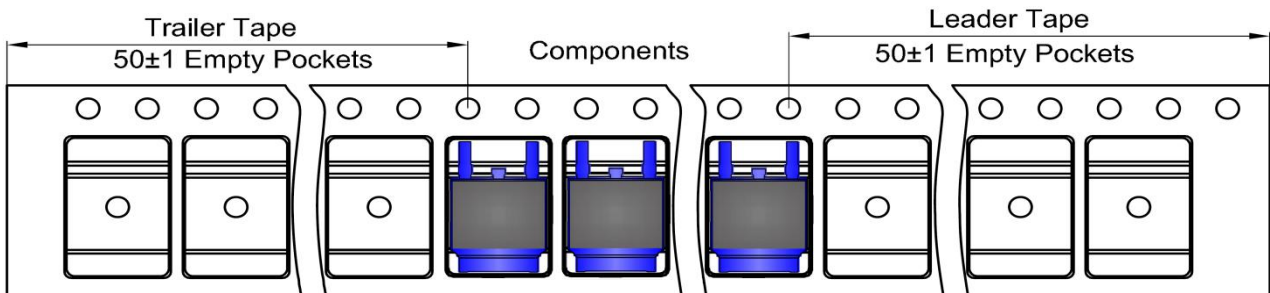
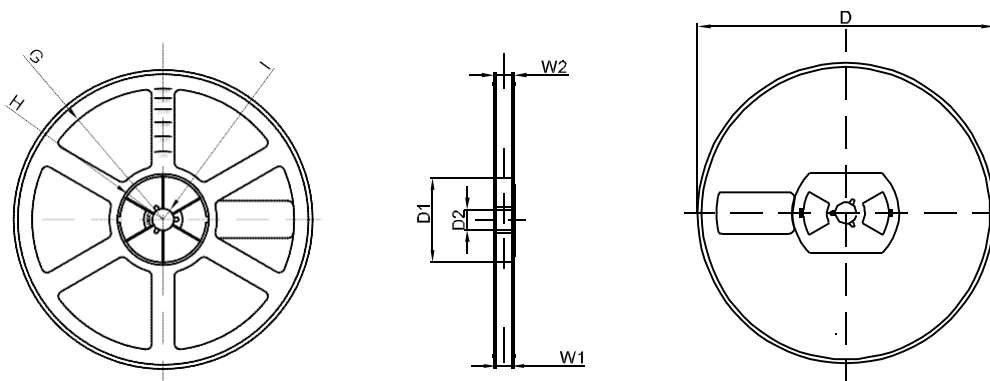
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
c	0.460	0.560	0.018	0.022
c1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286TYP		0.090TYP	
e1	4.327	4.727	0.170	0.186
M	1.778REF		0.070REF	
N	0.762REF		0.018REF	
L	9.800	10.400	0.386	0.409
L1	2.9REF		0.114REF	
L2	1.400	1.700	0.055	0.067
V	4.830REF		0.190REF	
Φ	1.100	1.300	0.043	0.051

**TO-252 Suggested Pad Layout**

**Note:**

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

**N-CHANNEL HIGH VOLTAGE MOSFET**
**TO-252 Tape and Reel**
**TO-252 Embossed Carrier Tape**


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

**TO-252 Tape Leader and Trailer**

**TO-252 Reel**


DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13" DIA	Ø330.00	100.00	Φ21.00	R151.00	R56.00	R6.50	16.40	21.00
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1