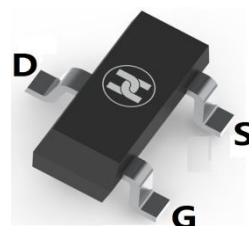
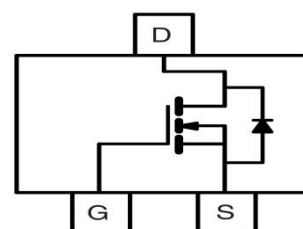


**HIGH VOLTAGE MOSFET (N-CHANNEL)**
**FEATURES**

- Low on-resistance:  $V_{DS}=300V, R_{DS(ON)}=4\Omega @ V_{GS}=10V, I_D=0.25A$
- Low Input Capacitance
- Fast Switching Speed
- Low Gate Threshold Voltage
- Surface Mount device


**SOT-23**

**MECHANICAL DATA**

- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.008 grams (approximate)

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

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	300	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current	$I_D$	0.25	A
Pulsed drain current (10 $\mu$ s Pulse, Duty Cycle $\leq 1\%$ )	$I_{DM}$	2	A
Maximum Body Diode Continuous Current	$I_S$	0.8	A
Power dissipation	$P_D$	0.47	W
Thermal resistance from Junction to ambient	$R_{\theta JA}$	377	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	81	$^\circ\text{C/W}$
Junction temperature	$T_J$	150	$^\circ\text{C}$
Storage temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Uni	Conditions
<b>STATIC CHARACTERISTICS</b>						
Drain-Source breakdown voltage	$V_{(BR)DSS}$	300			V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current	$I_{DSS}$			1.0	$\mu A$	$V_{DS}=240V, V_{GS}=0V$
Gate-body leakage current	$I_{GSS}$			$\pm 100$	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
Gate-threshold voltage (note 1)	$V_{GS(th)}$	1.0		3.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance (note 1)	$R_{DS(ON)}$		2.1	4	$\Omega$	$V_{GS}=10V, I_D=0.3A$
			2.1	4	$\Omega$	$V_{GS}=4.5V, I_D=0.2A$
			3.8	6	$\Omega$	$V_{GS}=2.7V, I_D=0.1A$
Diode forward voltage (note 1)	$V_{SD}$		0.7	1.2	V	$I_S=0.3A, V_{GS}=0V$
<b>DYNAMIC CHARACTERISTICS</b>						
Input capacitance	$C_{iss}$		187.3		pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Output capacitance	$C_{oss}$		11.7		pF	
Reverse transfer capacitance	$C_{rss}$		8.7		pF	
Total gate charge	$Q_g$		7.6		nC	$V_{DS}=192V, V_{GS}=10V, I_D=0.5A$
Gate-source charge	$Q_{gs}$		0.5		nC	
Gate-drain charge	$Q_{gd}$		3.3		nC	
Turn-on delay time	$t_{d(on)}$		4.9		nS	$V_{DS}=60V, V_{GS}=10V, R_{GEN}=25\Omega, R_L=200\Omega$
Turn-on rise time	$t_r$		4.7		nS	
Turn-off delay time	$t_{d(off)}$		25.8		nS	
Turn-off fall time	$t_f$		17.5		nS	

Note: 1. Pulse test

**HIGH VOLTAGE MOSFET (N-CHANNEL)**  
**Typical Characteristics**

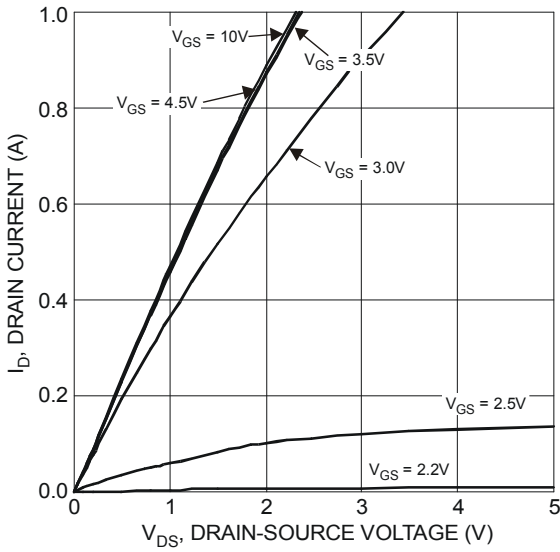


Figure 1 Typical Output Characteristics

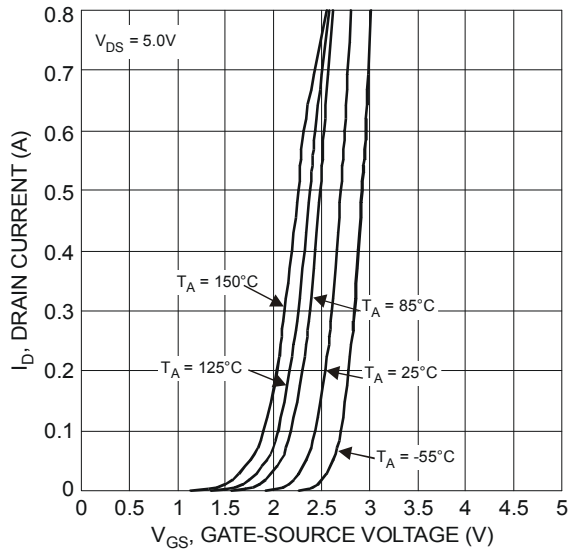


Figure 2 Typical Transfer Characteristics

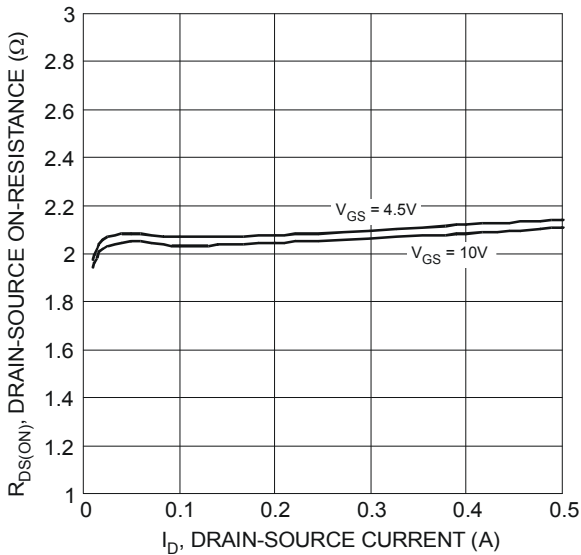


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

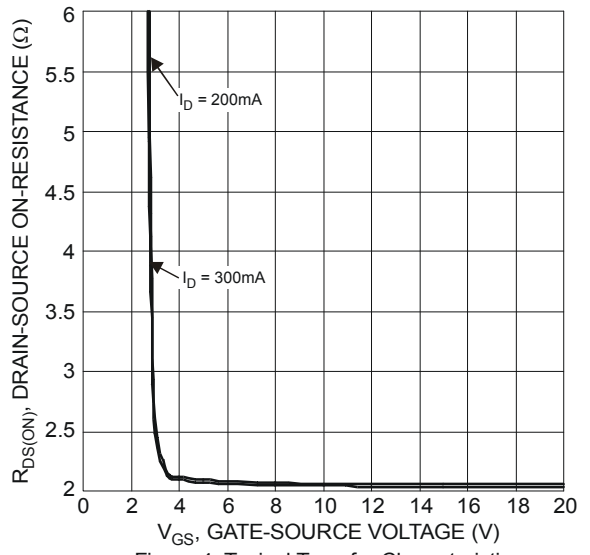


Figure 4 Typical Transfer Characteristics

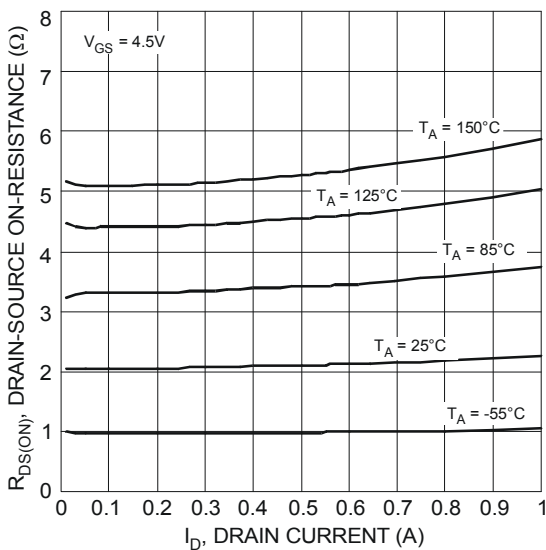


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

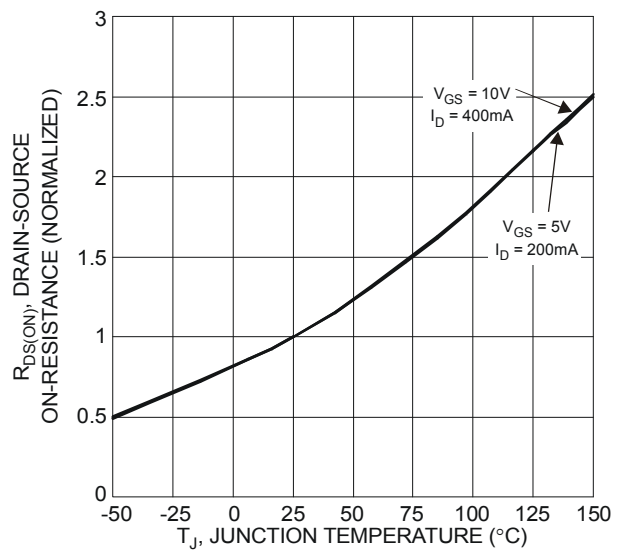


Figure 6 On-Resistance Variation with Temperature

**HIGH VOLTAGE MOSFET (N-CHANNEL)**

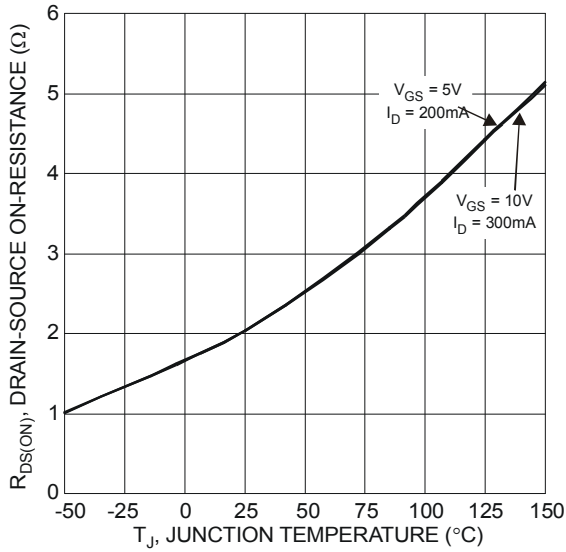


Figure 7 On-Resistance Variation with Temperature

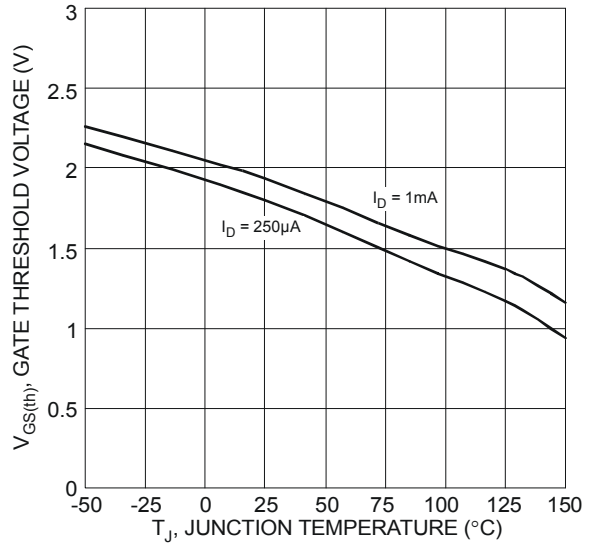


Figure 8 Gate Threshold Variation vs. Ambient Temperature

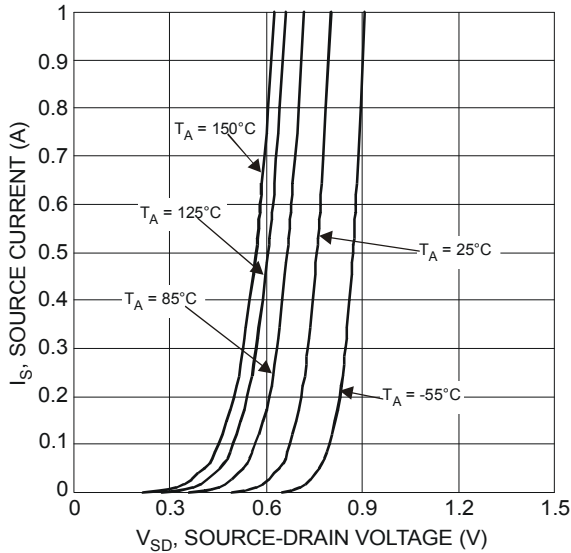


Figure 9 Diode Forward Voltage vs. Current

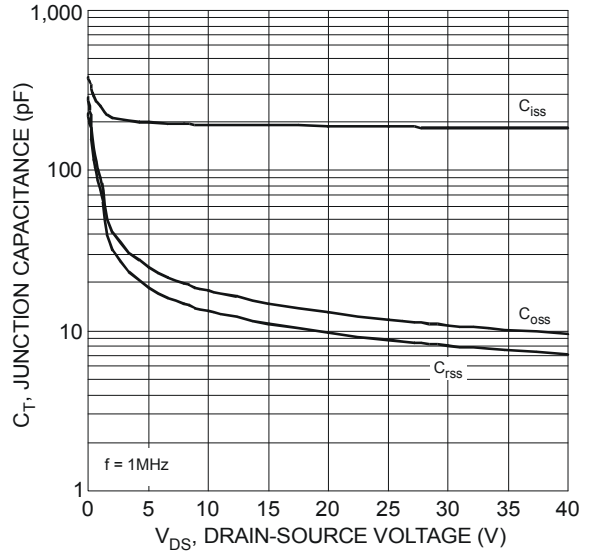


Figure 10 Typical Junction Capacitance

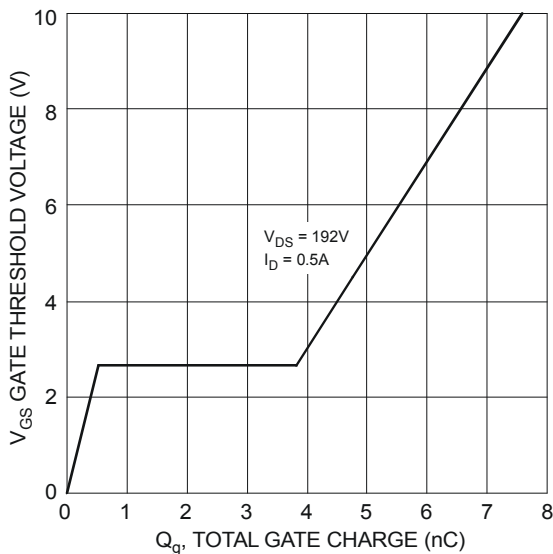


Figure 11 Gate Charge

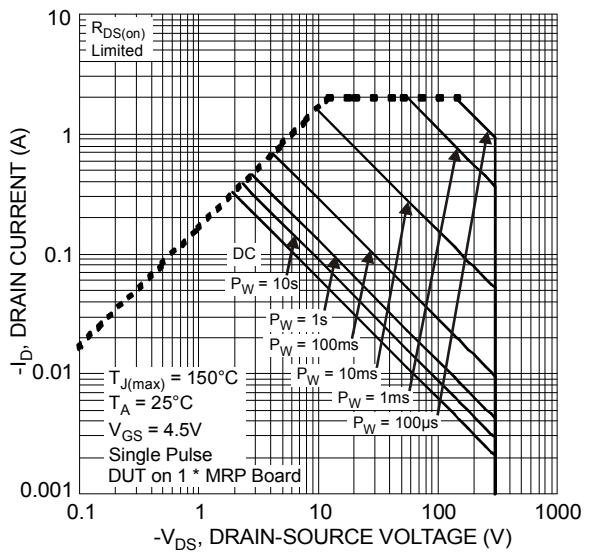


Figure 12 SOA, Safe Operation Area

**HIGH VOLTAGE MOSFET (N-CHANNEL)**

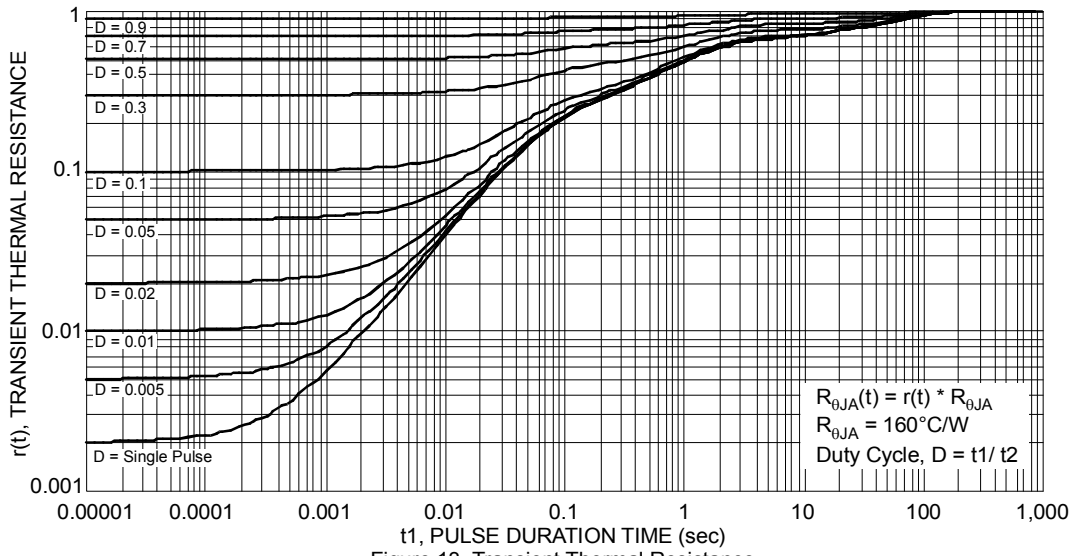
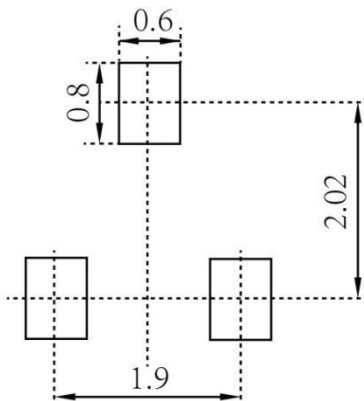


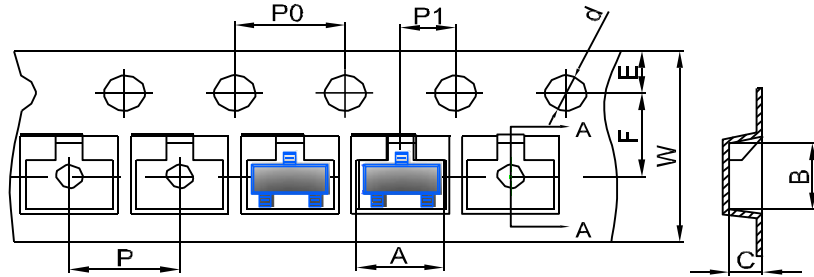
Figure 13 Transient Thermal Resistance

**HIGH VOLTAGE MOSFET (N-CHANNEL)**
**SOT-23 Package Outline Dimensions**

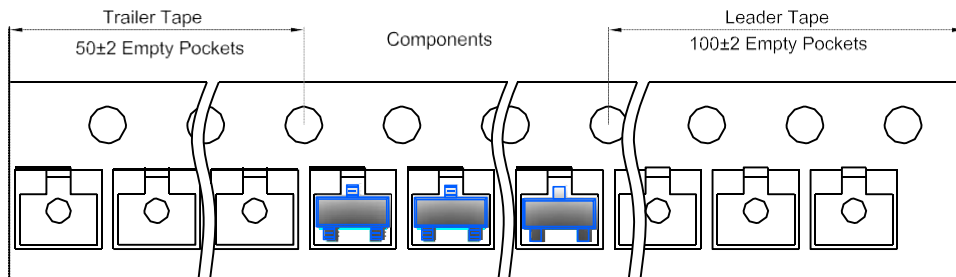
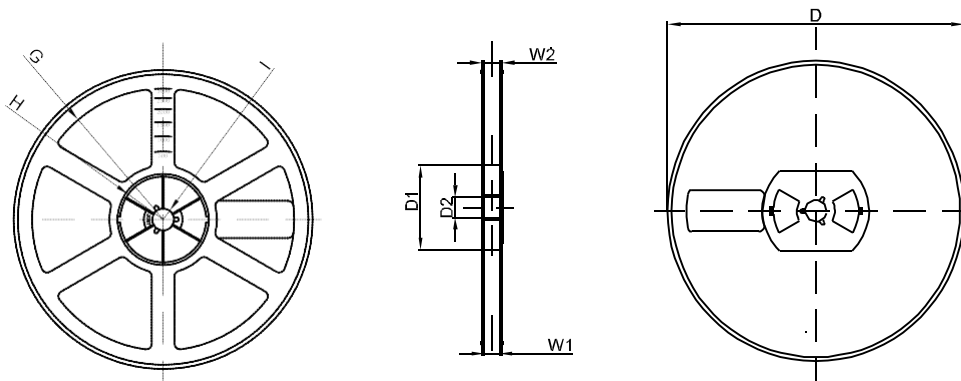

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°

**SOT-23 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

**HIGH VOLTAGE MOSFET (N-CHANNEL)**
**SOT-23 Tape and Reel**
**SOT-23 Embossed Carrier Tape**


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

**SOT-23 Tape Leader and Trailer**

**SOT-23 Reel**


DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø178	54.40	13.00	R78	R25.60	R6.50	9.50	12.30
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1