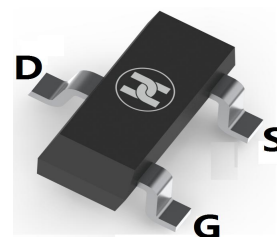
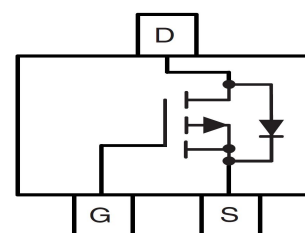


LOW VOLTAGE MOSFET (P-CHANNEL)
FEATURES

- $V_{DS}=-30V, R_{DS(ON)} \leq 50m\Omega @ V_{GS}=-4.5V, I_D=-4A$
- Low on-resistance
- For DC to DC converter and Load switch applications
- Surface Mount device


SOT-23

MECHANICAL DATA

- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- 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}	-30	V
Gate-source voltage	V_{GS}	± 12	V
Continuous drain current ($T_J = 150^\circ\text{C}$)	I_D	$T_A = 25^\circ\text{C}$	-4.0
		$T_A = 70^\circ\text{C}$	-3.2
Pulsed drain current	I_{DM}	-15	A
Continuous Source-Drain Diode current	I_S	-0.59	A
Power dissipation	P_D	$T_A = 25^\circ\text{C}$	1.25
		$T_A = 70^\circ\text{C}$	0.55
Thermal resistance from Junction to ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$
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	Symbo	Min	Typ	Max	Unit	Conditions	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	-30			V	$V_{GS}=0V, I_D=-250\mu A$	
Zero gate voltage drain current	I_{DSS}			-1	μA	$V_{DS}=-30V, V_{GS}=0V$	
				-10	μA	$V_{DS}=-30V, V_{GS}=0V, T_J = 55^\circ\text{C}$	
Gate-body leakage current	I_{GSS}			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 20V$	
Gate-threshold voltage (note 1)	$V_{GS(th)}$	-0.5	-0.9	-1.5	V	$V_{DS}=V_{GS}, I_D=-250\mu A$	
Drain-source on-resistance (note 1)	$R_{DS(ON)}$		46	58	m Ω	$V_{GS}=-10V, I_D=-4.0A$	
				50	72	m Ω	$V_{GS}=-4.5V, I_D=-3.5A$
				63	86	m Ω	$V_{GS}=-2.5V, I_D=-1.0A$
Forward transconductance (note 1)	g_{FS}		3		S	$V_{DS}=-5V, I_D=-4A$	
Input capacitance (note 1)	C_{iss}		945		pF	$V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$	
Output capacitance (note 1)	C_{oss}		120		pF		
Reverse transfer capacitance (note 1)	C_{rss}		80		pF		
Turn-on delay time (note 1)	$t_{d(on)}$		15		nS		
Turn-on rise time (note 1)	t_r		3		nS	$V_{DD}=-15V, I_D=-4A, V_{GS}=-10V, R_g=6\Omega$	
Turn-off delay time (note 1)	$t_{d(off)}$		66		nS		
Turn-off fall time (note 1)	t_f		16		nS		
Total gate charge (note 1)	Q_g		9		nC	$V_{DS}=-15V, V_{GS}=-4.5V, I_D=-4A$	
Gate-source charge (note 1)	Q_{gs}		1		nC		
Gate-drain charge (note 1)	Q_{gd}		3		nC		
Diode forward voltage (note 1)	V_{SD}			-1.2	V	$I_S=-1.0A, V_{GS}=0V$	

Note: 1. Pulse test ; Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

LOW VOLTAGE MOSFET (P-CHANNEL)

Typical Characteristics

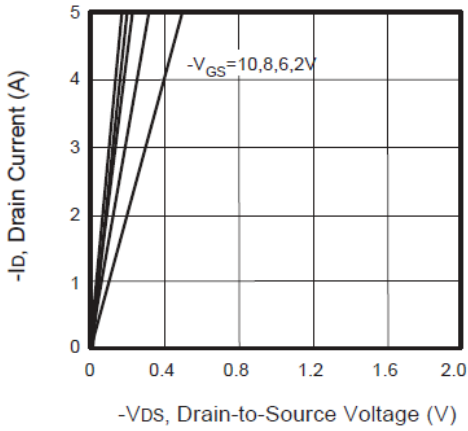


Figure 1. Output Characteristics

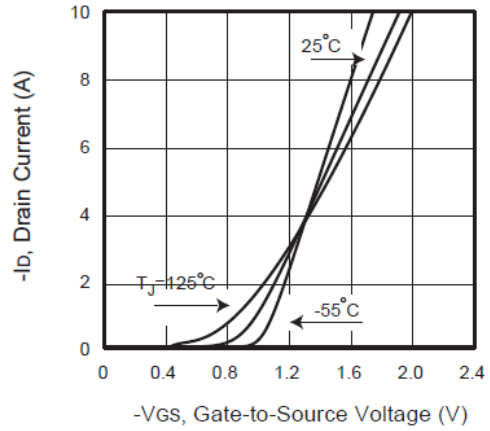


Figure 2. Transfer Characteristics

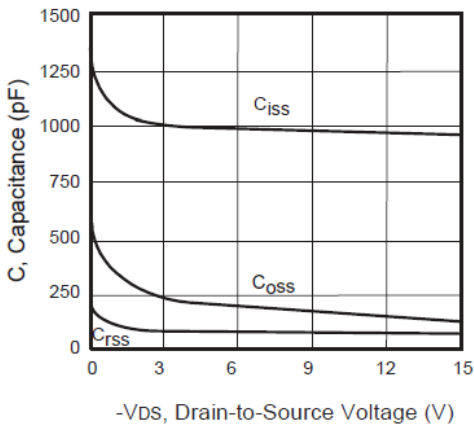


Figure 3. Capacitance

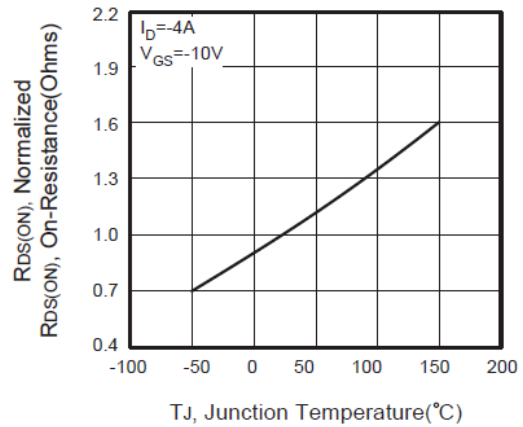


Figure 4. On-Resistance Variation with Temperature

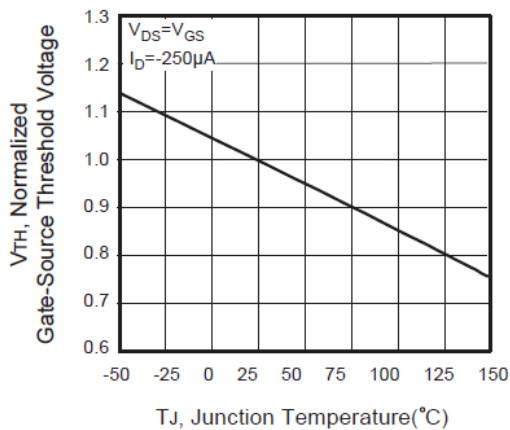


Figure 5. Gate Threshold Variation with Temperature

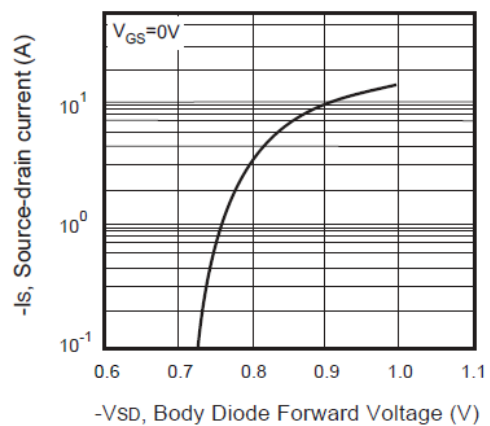


Figure 6. Body Diode Forward Voltage Variation with Source Current

LOW VOLTAGE MOSFET (P-CHANNEL)

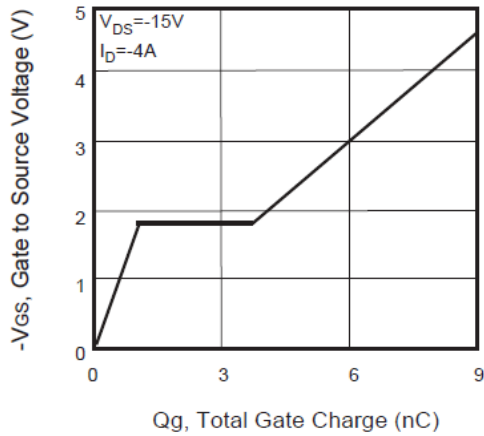


Figure 7. Gate Charge

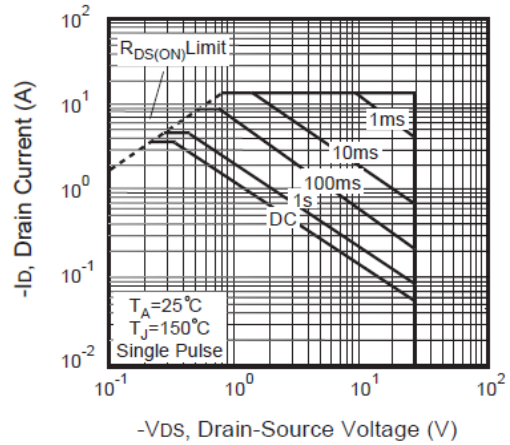


Figure 8. Maximum Safe Operating Area

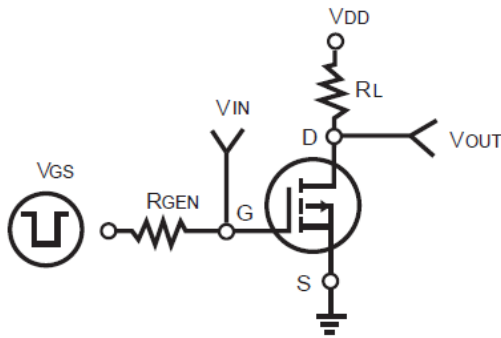


Figure 9. Switching Test Circuit

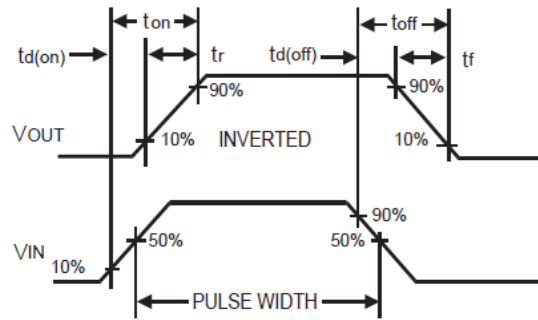


Figure 10. Switching Waveforms

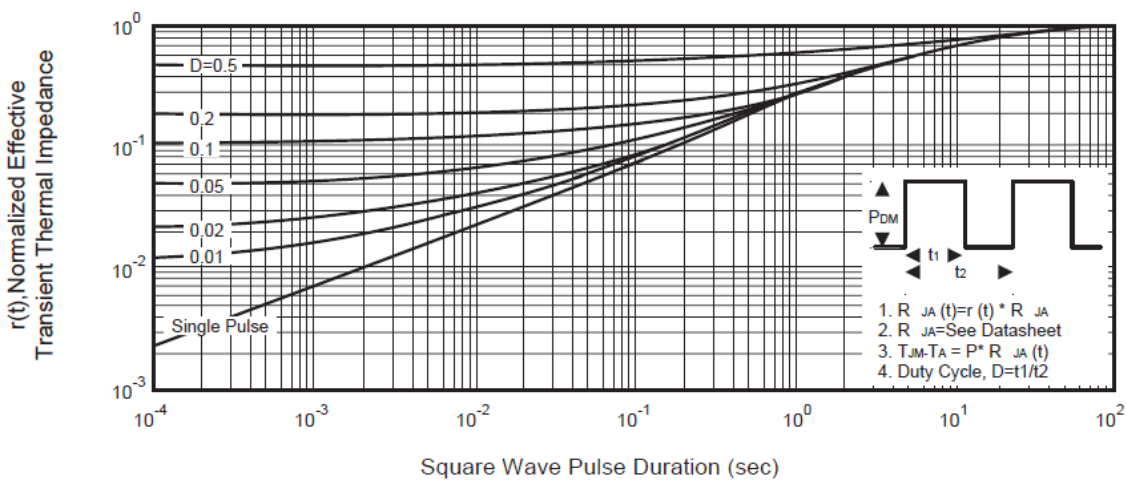
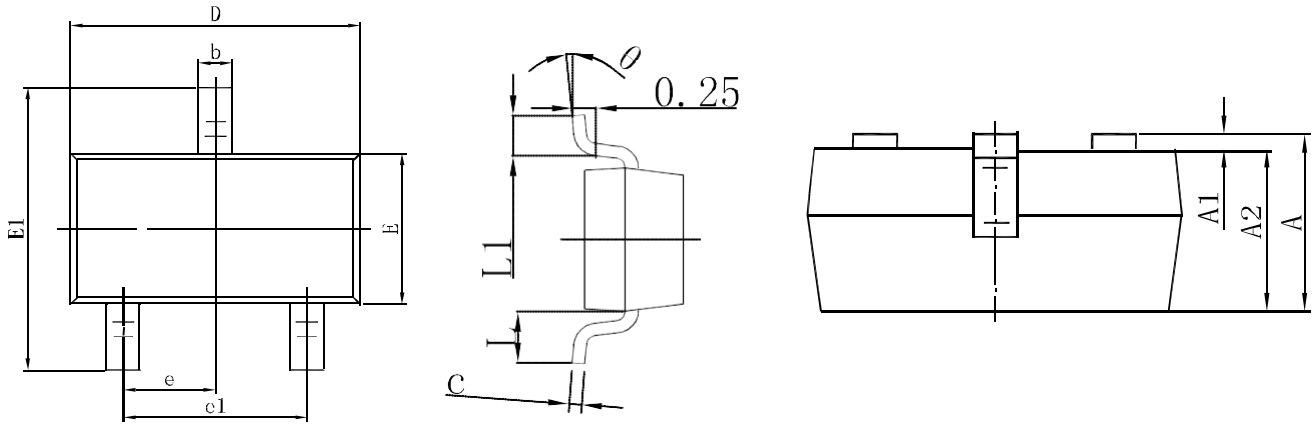
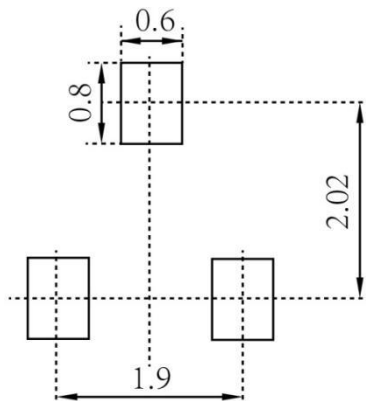


Figure 11. Normalized Thermal Transient Impedance Curve

LOW VOLTAGE MOSFET (P-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
θ	0°	8°	0°	8°

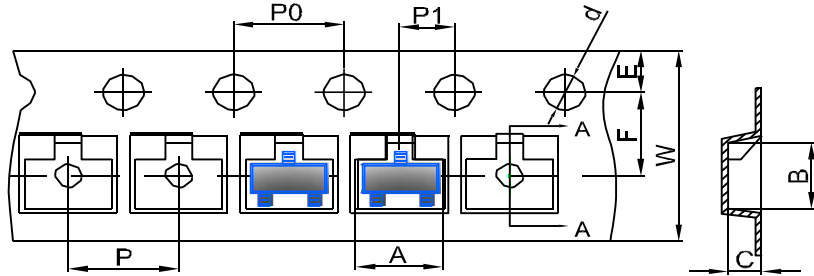
SOT-23 Suggested Pad Layout

Note:

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

LOW VOLTAGE MOSFET (P-CHANNEL)

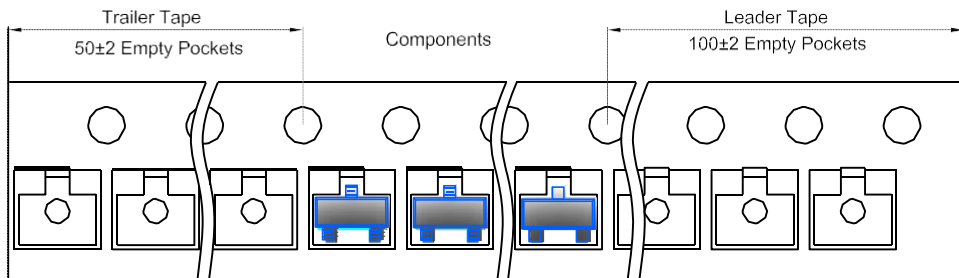
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

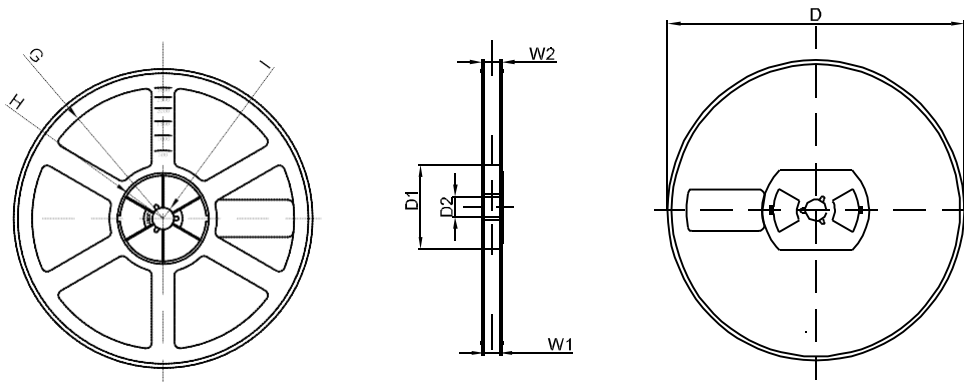


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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