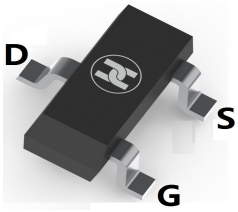
LOW VOLTAGE MOSFET (N-CHANNEL)



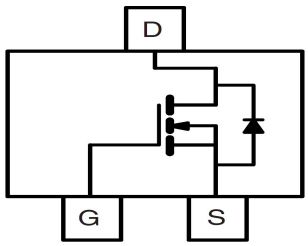
SOT-23

FEATURES

- Ultra low on-resistance:V_{DS}=60V,$R_{DS(ON)}$≤82mΩ@V_{GS}=10V,I_D=3A
- Load Switch
- DC/DC Converters

MECHANICAL DATA

- Case: SOT-23
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.008 grams (approximate)



Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	T_A=25°C	I_D	3	A
	T_A=70°C		2.4	
Drain Current (Pulse) *B		I_{DM}	12	A
Power Dissipation	T_A=25°C	P_D	1.25	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= 250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= 250μA	1	1.7	2.5	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 3A	--	82	105	mΩ
	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 5A	--	102	125	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= 1A , V_{GS}= 0V	--	0.75	1.2	V
Diode Forward Current	I_S	T_A =25°C	--	--	1.7	A
Switching						
Total Gate Charge	Q_g	V_{GS}= 10V, V_{DS}= 30V, I_D= 3A	--	13	--	nC
Gate-Source Charge	Q_{gs}		--	1	--	nC
Gate-Drain Charge	Q_{gd}		--	4	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 30V, R_G = 6Ω, I_D = 1A, V_{GS} = 10V	--	11	--	ns
Turn-on Rise Time	t_r		--	5	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	26	--	ns
Turn-Off Fall Time	t_f		--	4	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{GS}=0V,V_{DS}= 25V,f= 1.0MHz	--	560	--	pF
Output Capacitance	C_{oss}		--	70	--	pF
Reverse Transfer Capacitance	C_{rss}		--	40	--	pF

LOW VOLTAGE MOSFET (N-CHANNEL)

Typical Characteristics

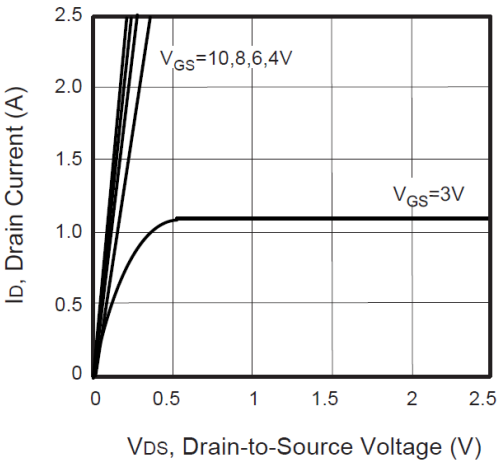


Figure 1. Output Characteristics

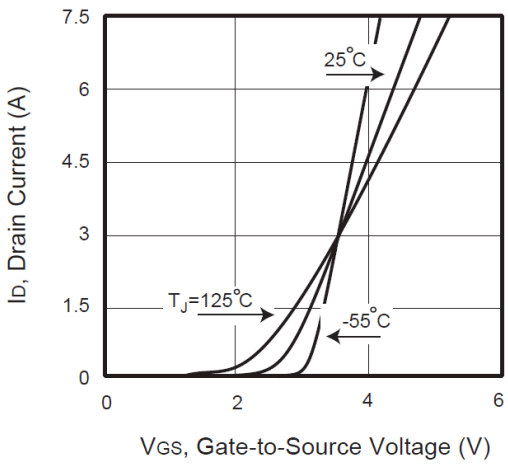


Figure 2. Transfer Characteristics

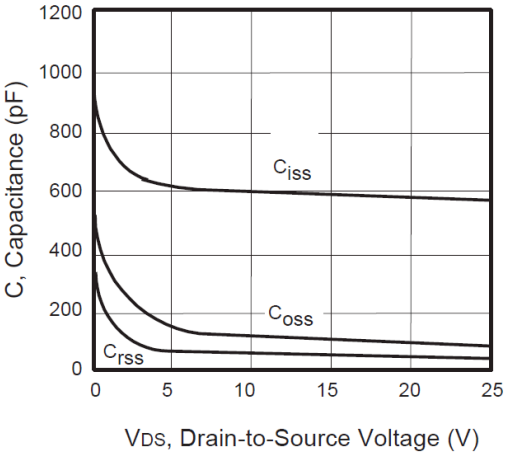


Figure 3. Capacitance

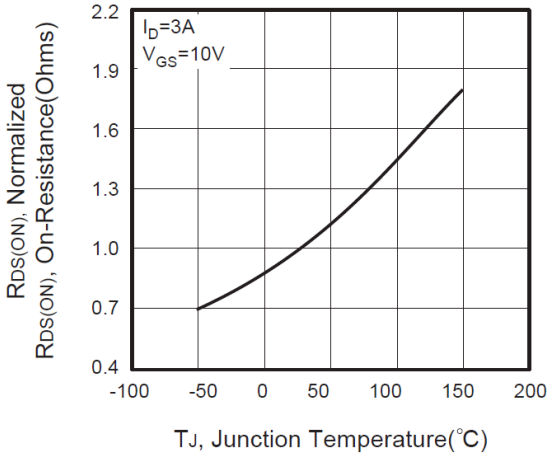


Figure 4. On-Resistance Variation with Temperature

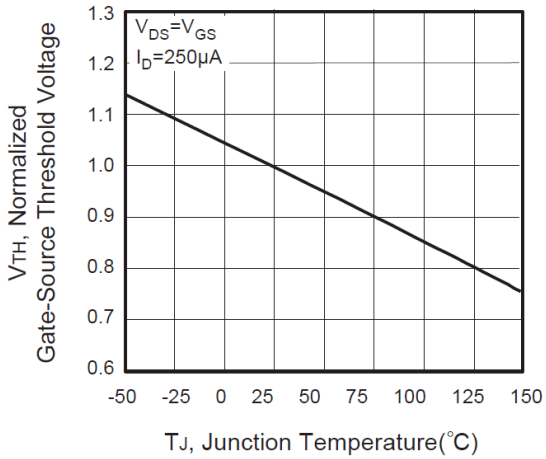


Figure 5. Gate Threshold Variation with Temperature

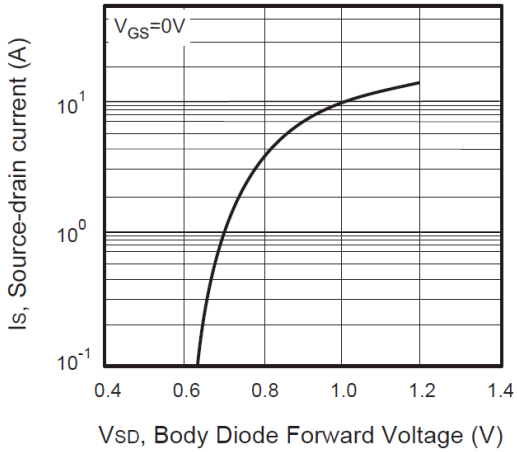


Figure 6. Body Diode Forward Voltage Variation with Source Current

LOW VOLTAGE MOSFET (N-CHANNEL)

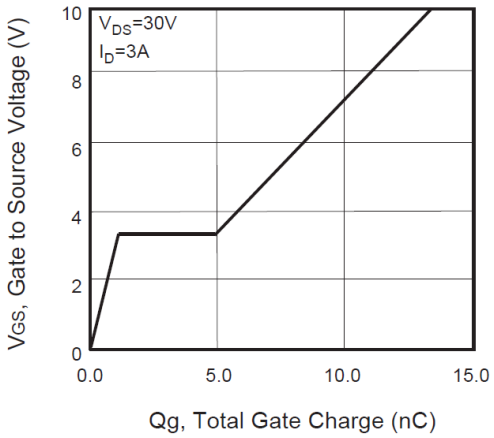


Figure 7. Gate Charge

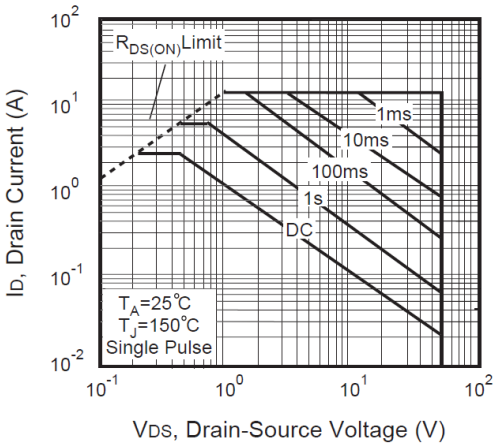


Figure 8. Maximum Safe Operating Area

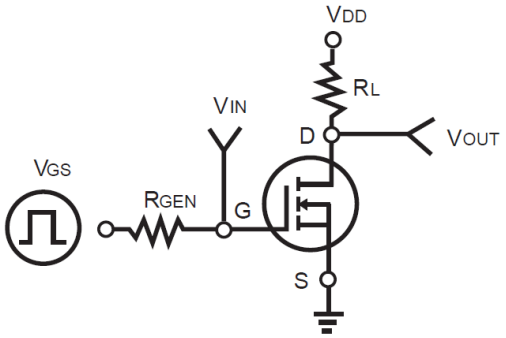


Figure 9. Switching Test Circuit

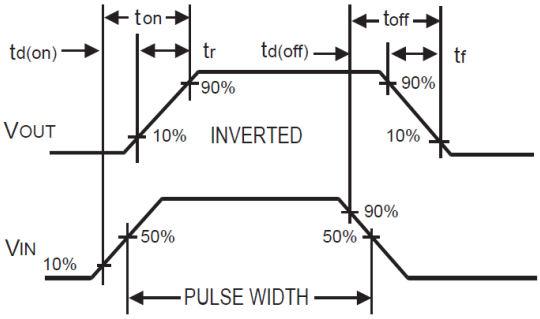


Figure 10. Switching Waveforms

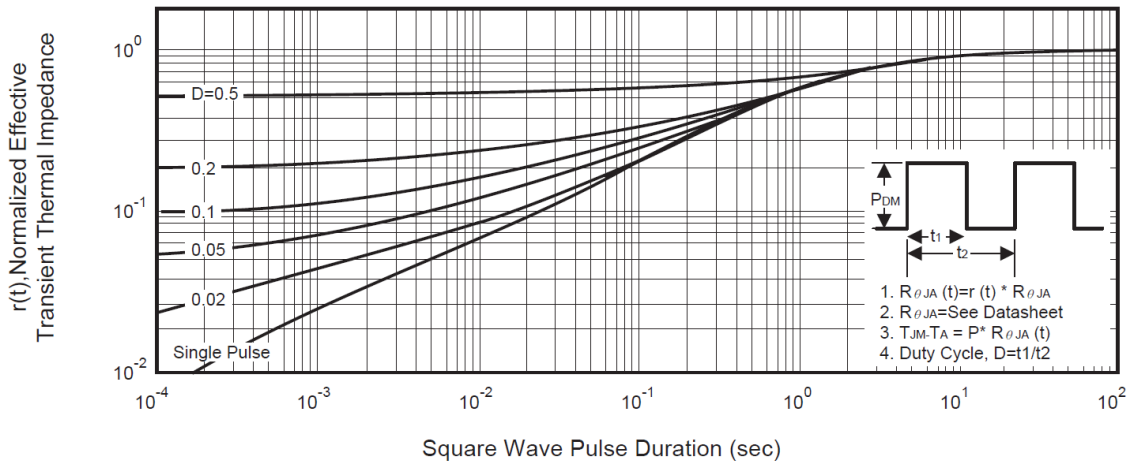
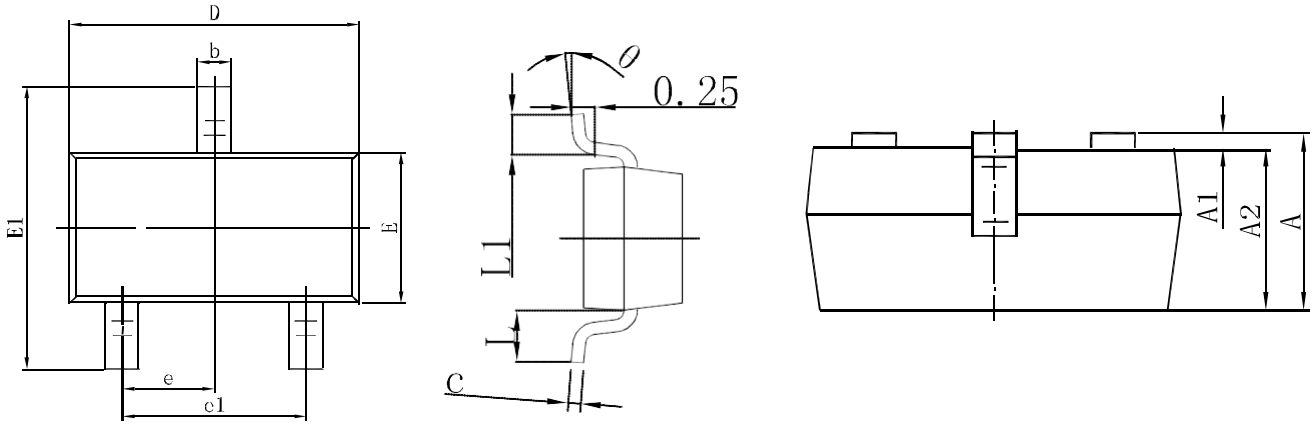


Figure 11. Normalized Thermal Transient Impedance Curve

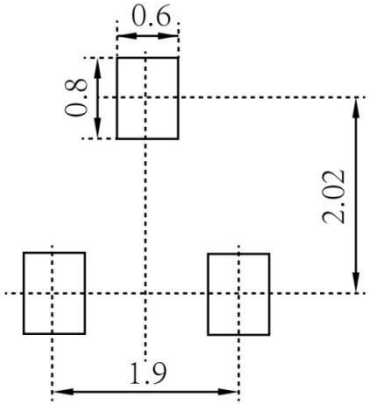
LOW VOLTAGE MOSFET (N-CHANNEL)

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
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1.Controlling dimension: in millimeters

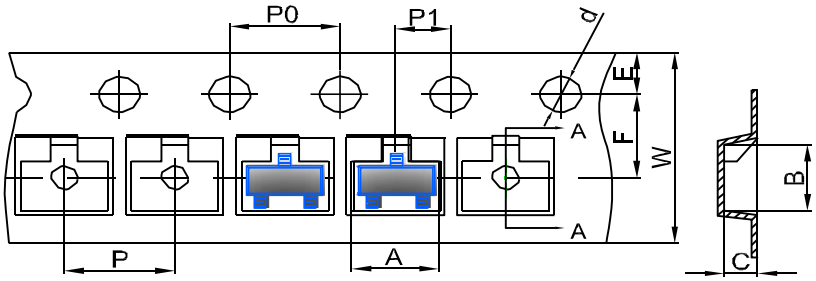
2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only

LOW VOLTAGE MOSFET (N-CHANNEL)

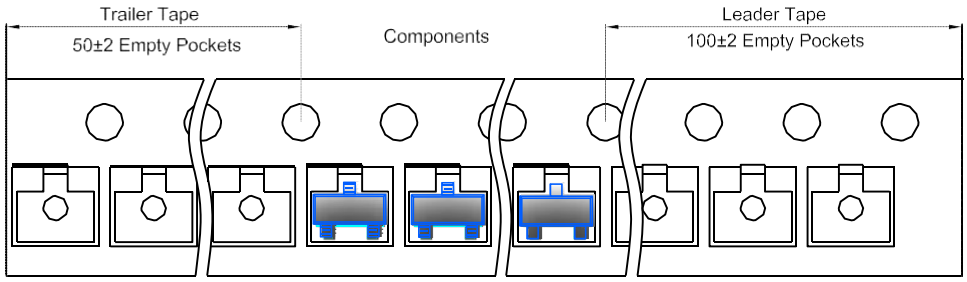
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

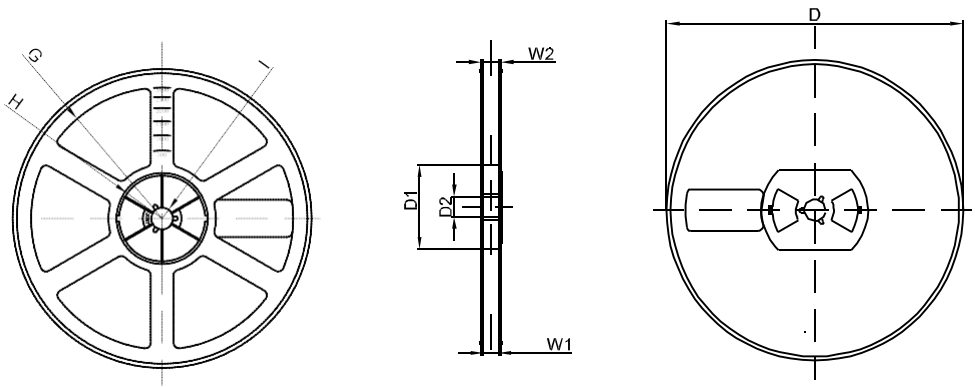


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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