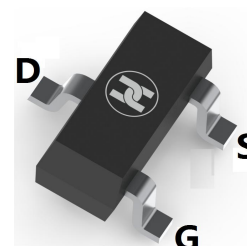
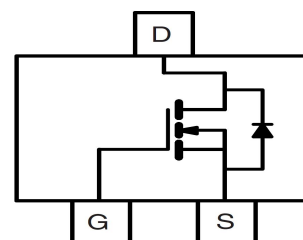


LOW VOLTAGE MOSFET (N-CHANNEL)

FEATURES

- Low on-resistance: $R_{DS(ON)} \leq 160m\Omega @ V_{GS}=10V$
- For Low power DC to DC converter application
- For Load switch application
- 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}	60	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current	$T_A=25^\circ\text{C}$	I_D	3
	$T_A=70^\circ\text{C}$	I_D	2.3
Pulsed drain current (Note 1)	I_{DM}	10	A
Power dissipation	P_D	1.38	W
Thermal resistance from Junction to ambient	$R_{\theta JA}$	90	$^\circ\text{C/W}$
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

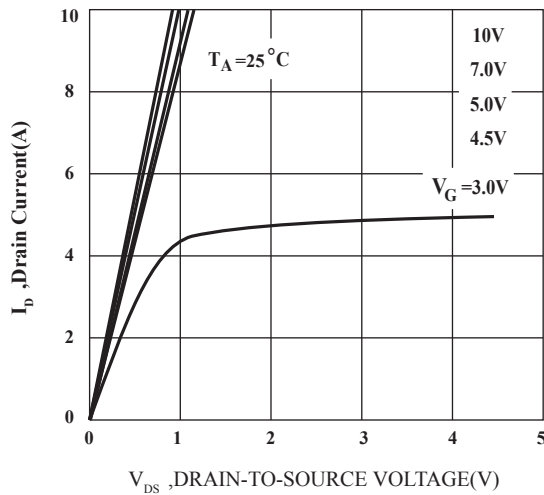
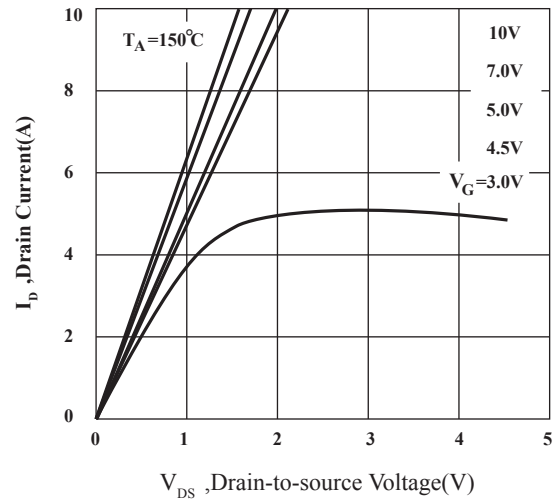
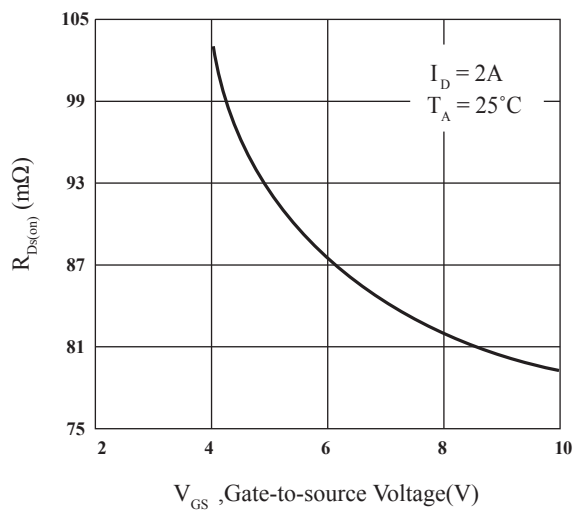
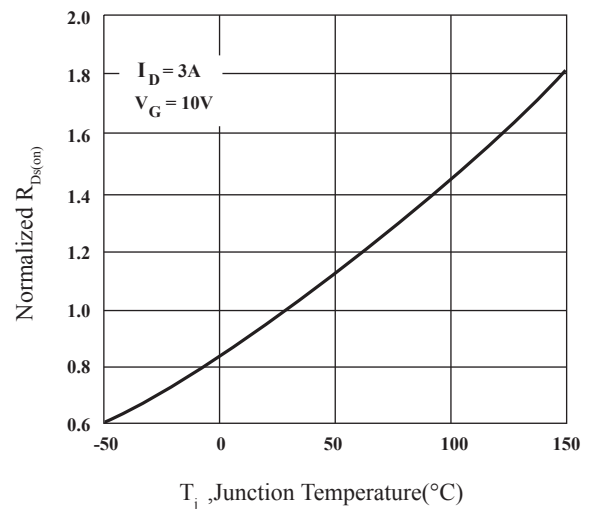
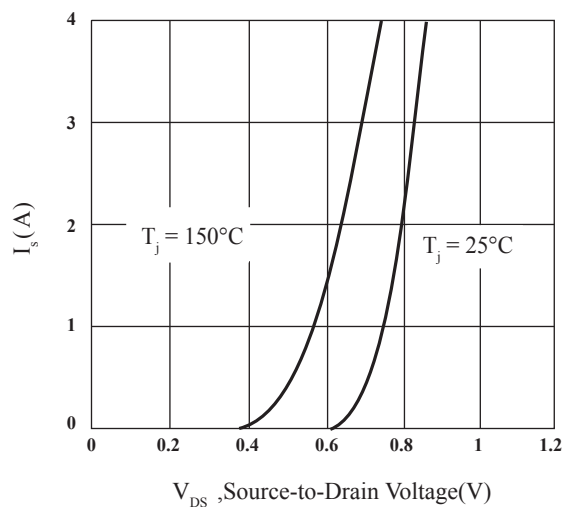
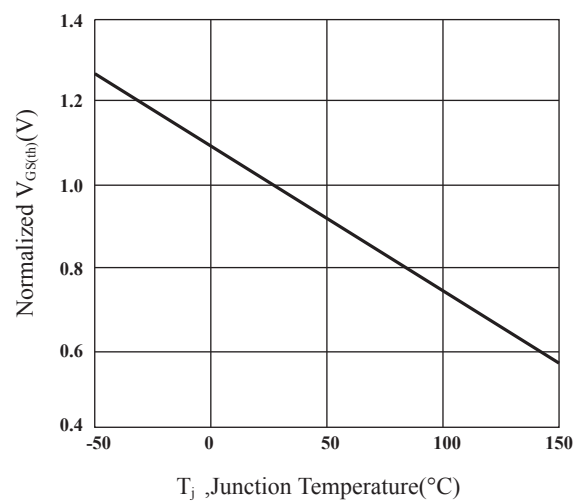
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

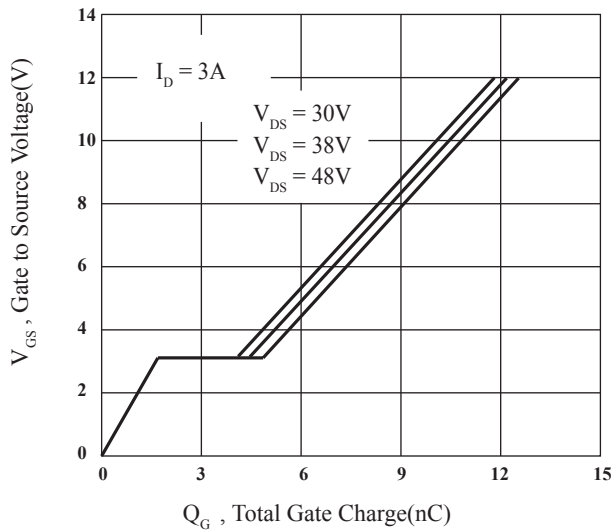
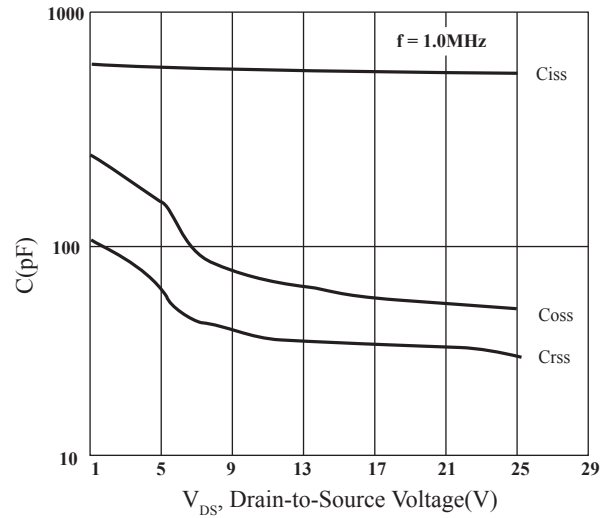
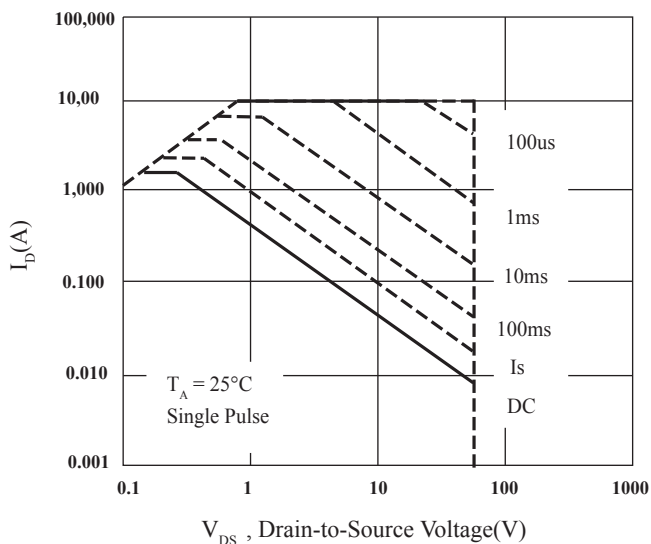
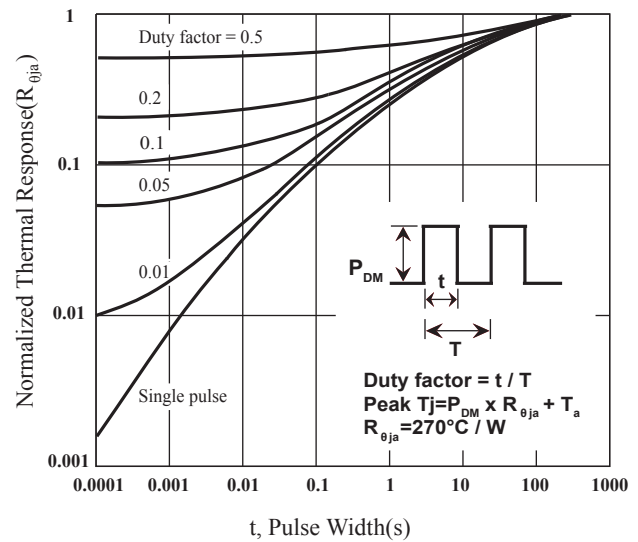
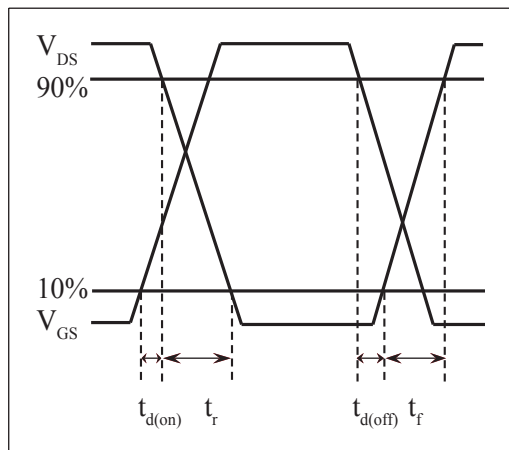
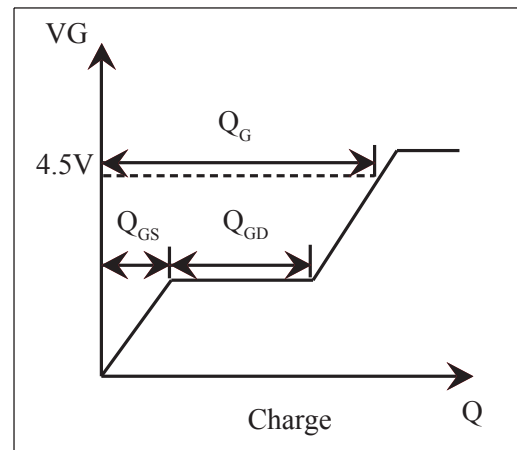
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage	$V_{(BR)DSS}$	60			V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current	I_{DSS}			10	μA	$V_{DS}=60V, V_{GS}=0V$
Gate-body leakage current	I_{GSS}			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
Gate-threshold voltage (note 1)	$V_{GS(th)}$	1		3.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance (note 1)	$R_{DS(ON)}$			160	m Ω	$V_{GS}=10V, I_D=2A$
				220	m Ω	$V_{GS}=4.5V, I_D=1.7A$
Forward transconductance (note 1)	g_{FS}		5		S	$V_{DS}=5V, I_D=3A$
Input capacitance	C_{iss}		490	780	pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Output capacitance	C_{oss}		55		pF	
Reverse transfer capacitance	C_{rss}		40		pF	
Turn-on delay time	$t_{d(on)}$		6		nS	$V_{DS}=30V, V_{GS}=10V, R_D=30\Omega, I_D=1A, R_G=3.3\Omega$
Turn-on rise time	t_r		5		nS	
Turn-off delay time	$t_{d(off)}$		16		nS	
Turn-off fall time	t_f		3		nS	
Total gate charge	Q_g		6	10	nC	$V_{DS}=48V, V_{GS}=4.5V, I_D=3A$
Gate-source charge	Q_{gs}		1.6		nC	
Gate-drain charge	Q_{gd}		3		nC	
Diode forward voltage (note 1)	V_{SD}			1.2	V	$I_S=1.2A, V_{GS}=0V$
Reverse Recovery Time	T_{rr}		25		nS	$V_{GS}=0V, I_S=3A, dI/dt=100A/\mu s$
Reverse Recovery Charge	Q_{rr}		26		nC	$V_{GS}=0V, I_S=3A, dI/dt=100A/\mu s$

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

LOW VOLTAGE MOSFET (N-CHANNEL)

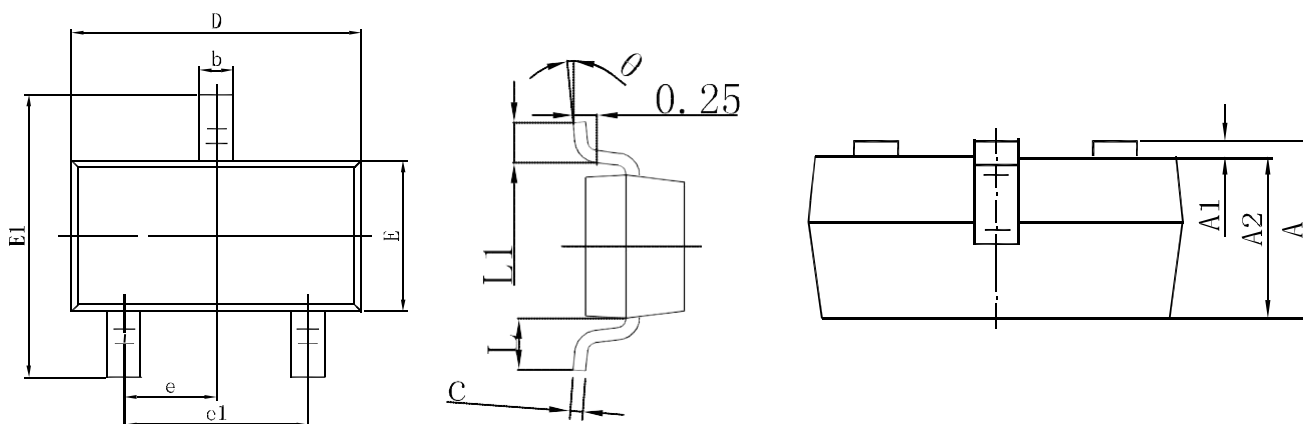
Typical Characteristics


FIG.1 Typical Output Characteristics

Fig.2 Typical Output Characteristics

Fig.3 On-Resistance v.s. Gate Voltage

Fig.4 Normalized OnResistance

Fig.5 Forward Characteristics of Reverse Diode

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

LOW VOLTAGE MOSFET (N-CHANNEL)

Fig 7. Gate Charge Characteristics

Fig 8. Typical Capacitance Characteristics

Fig 9. Maximum Safe Operation Area

Fig 10. Effective Transient Thermal Impedance

Fig 11. Switching Time Circuit

Fig.12 Gate Charge Waveform

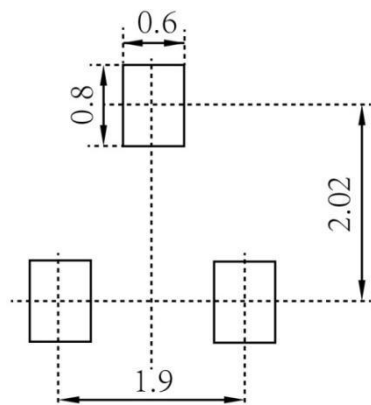
LOW VOLTAGE MOSFET (N-CHANNEL)

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



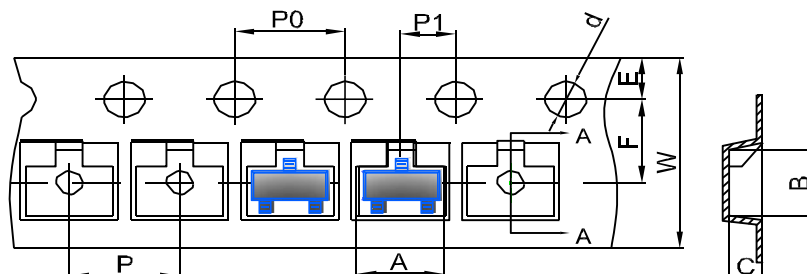
Note:

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

LOW VOLTAGE MOSFET (N-CHANNEL)

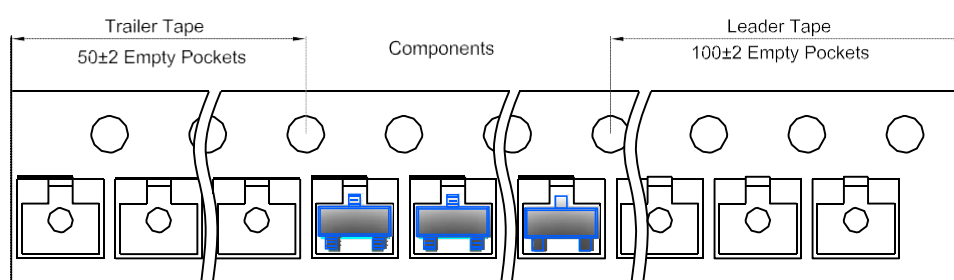
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

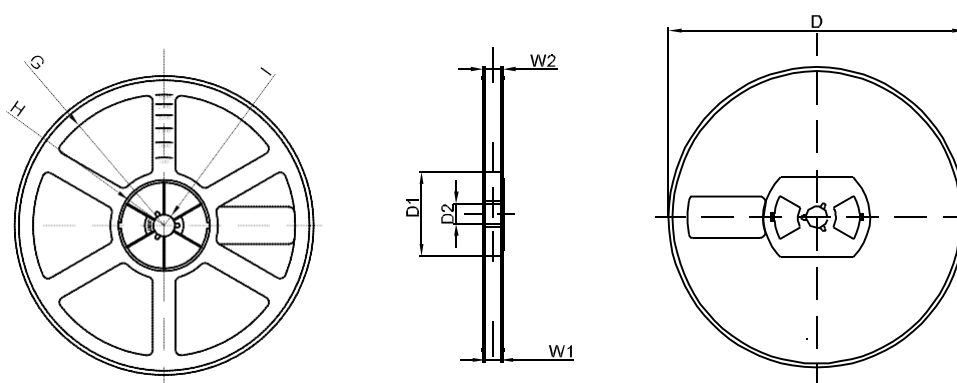


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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