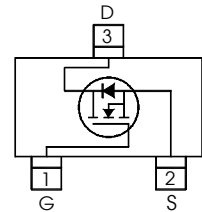
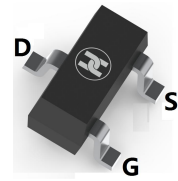


N-CHANNEL POWER MOSFET
FEATURES

- Ultra low on-resistance: $V_{DS}=20V, R_{DS(ON)}=64m\Omega @ V_{GS}=4.5V, I_D=3.5A$
- 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)
- Marking: 1AHK

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	±10	V
Continuous drain current	I_D	3	A
Pulsed drain current (Note 1)	I_{DM}	12	A
Power dissipation	P_D	1.25	W
Thermal resistance from Junction to ambient	$R_{\theta JA}$	230	°C/W
Junction temperature	T_J	150	°C
Storage temperature	T_{STG}	-55 ~ +150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage	$V_{(BR)DSS}$	20			V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current	I_{DSS}			1	uA	$V_{DS}=20V, V_{GS}=0V$
Gate-body leakage current	I_{GSS}			±100	nA	$V_{DS}=0V, V_{GS}=\pm 10V$
Gate-threshold voltage (note 1)	$V_{GS(th)}$	0.45	0.7	1.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance (note 1)	$R_{DS(ON)}$		50.7	64	mΩ	$V_{GS}=4.5V, I_D=3.5A$
			72.4	91	mΩ	$V_{GS}=2.5V, I_D=2A$
Forward transconductance (note 1)	g_{FS}	1.5			S	$V_{DS}=10V, I_D=0.5A$
Diode forward voltage (note 1)	V_{SD}			1.2	V	$I_S=0.13A, V_{GS}=0V, T_J=25^\circ C$
Diode forward current	I_S			1.3	A	
Input capacitance	C_{iss}		110		pF	$V_{DS}=15V, V_{GS}=0V, f=1MHz$
Output capacitance	C_{oss}		51		pF	
Reverse transfer capacitance	C_{rss}		25		pF	
Turn-on delay time	$t_{d(on)}$		2.5		nS	$V_{DD}=10V, I_D=1A, R_{GEN}=6\Omega, R_L=10\Omega$
Turn-on rise time	t_r		9.5		nS	
Turn-off delay time	$t_{d(off)}$		9.7		nS	
Turn-off fall time	t_f		4.8		nS	
Total gate charge	Q_g		2.6	3.9	nC	$V_{DS}=16V, V_{GS}=4.5V, I_D=0.93A$
Gate-source charge	Q_{gs}		0.41	0.62	nC	
Gate-drain charge	Q_{gd}		1.1	1.7	nC	

Note: 1. Pulse test ; Pulse width ≤ 300μs, Duty cycle ≤ 2% .

N-CHANNEL POWER MOSFET

Typical Characteristics

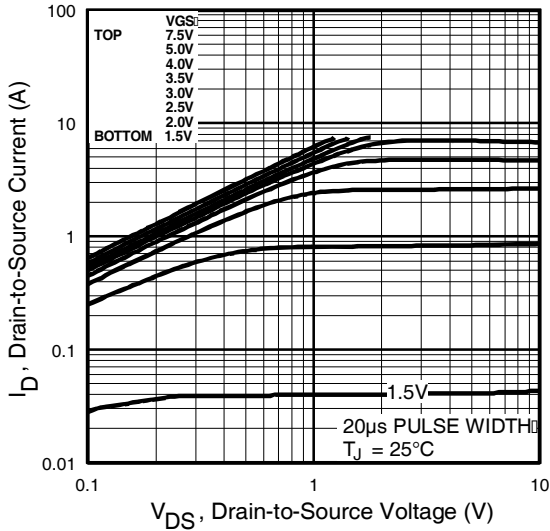


Fig 1. Typical Output Characteristics

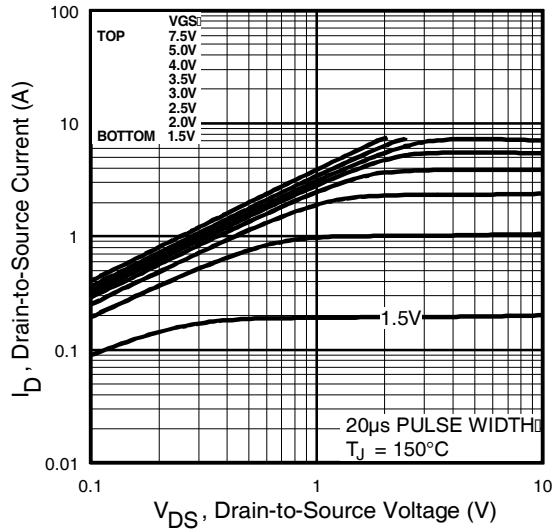


Fig 2. Typical Output Characteristics

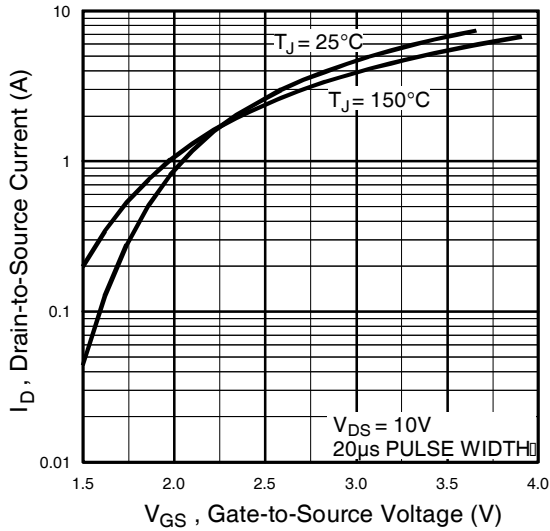


Fig 3. Typical Transfer Characteristics

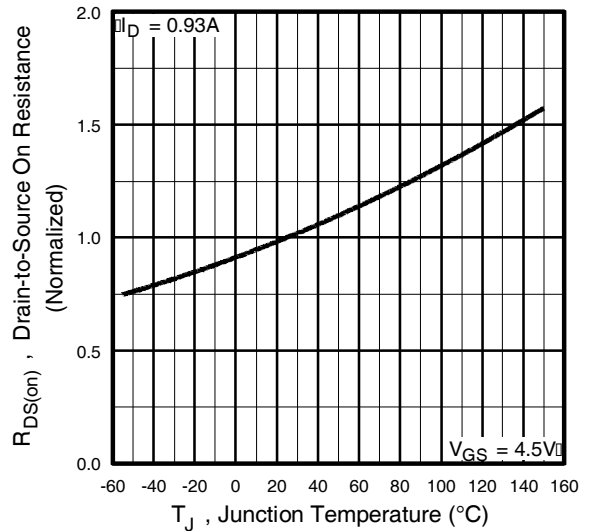


Fig 4. Normalized On-Resistance Vs. Temperature

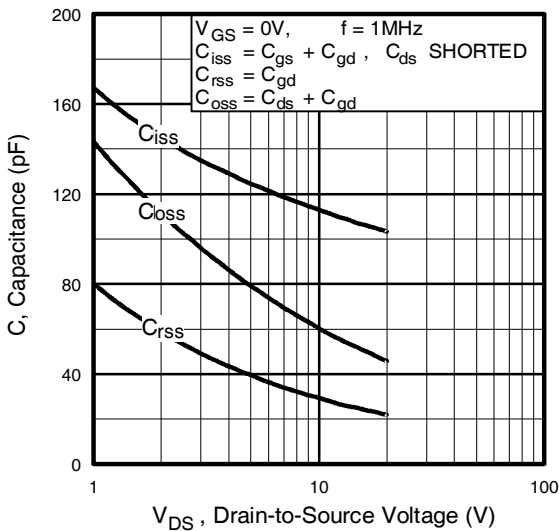


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

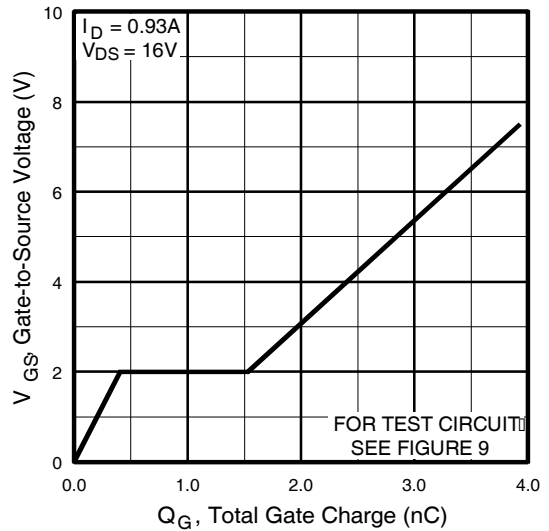


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

N-CHANNEL POWER MOSFET

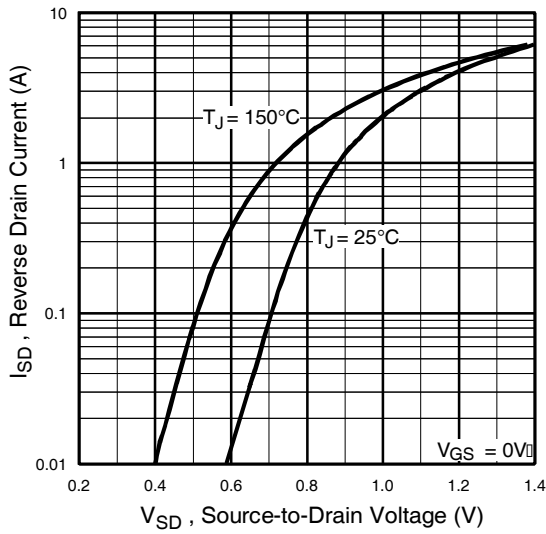


Fig 7. Typical Source-Drain Diode Forward Voltage

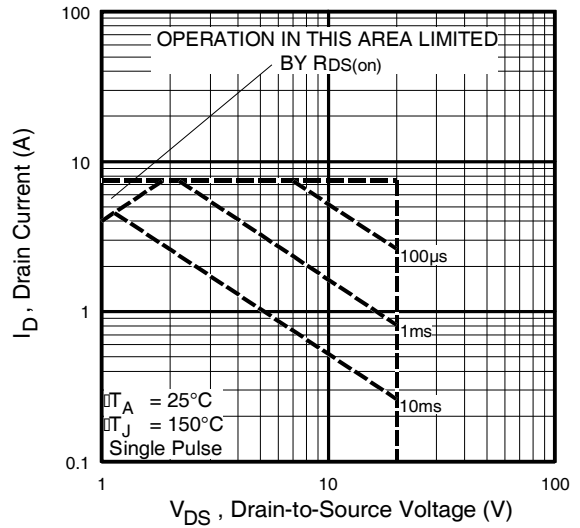


Fig 8. Maximum Safe Operating Area

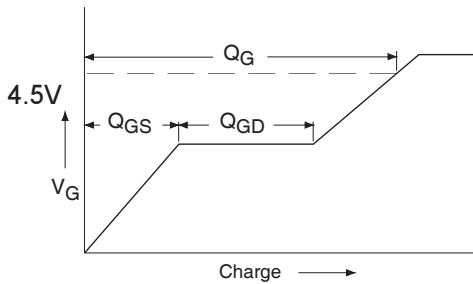


Fig 9a. Basic Gate Charge Waveform

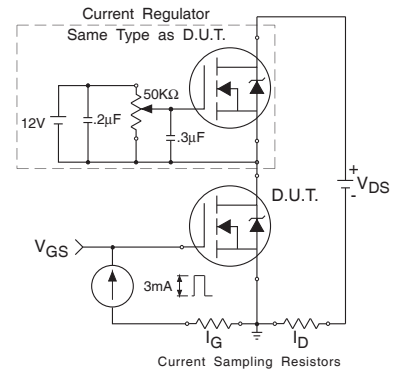


Fig 9b. Gate Charge Test Circuit

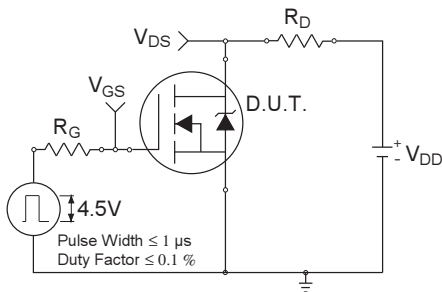


Fig 10a. Switching Time Test Circuit

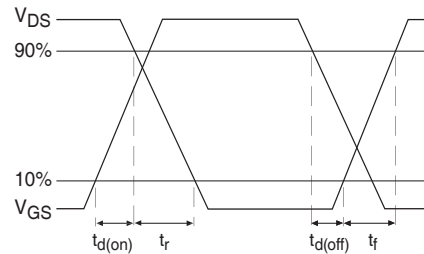


Fig 10b. Switching Time Waveforms

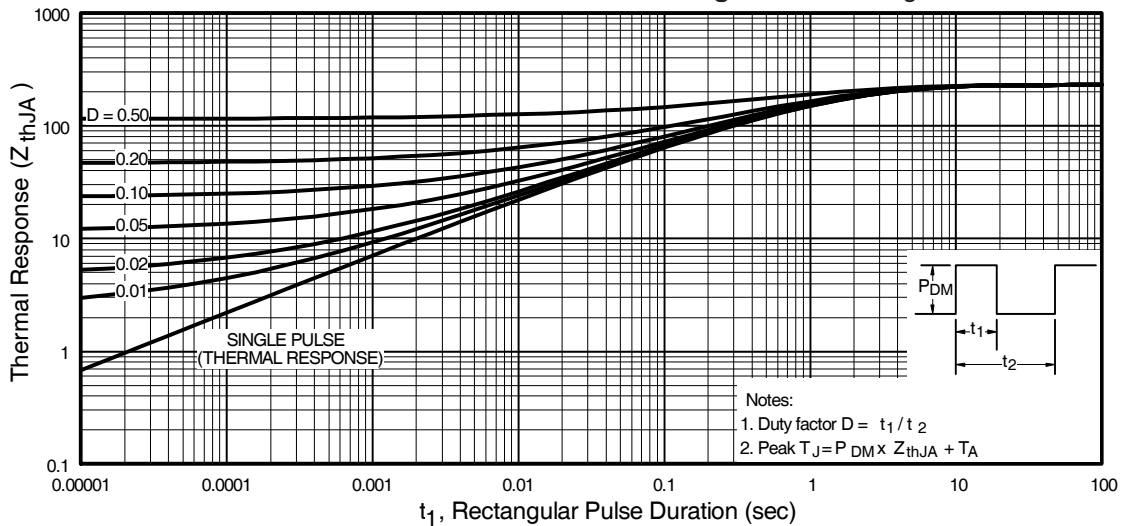
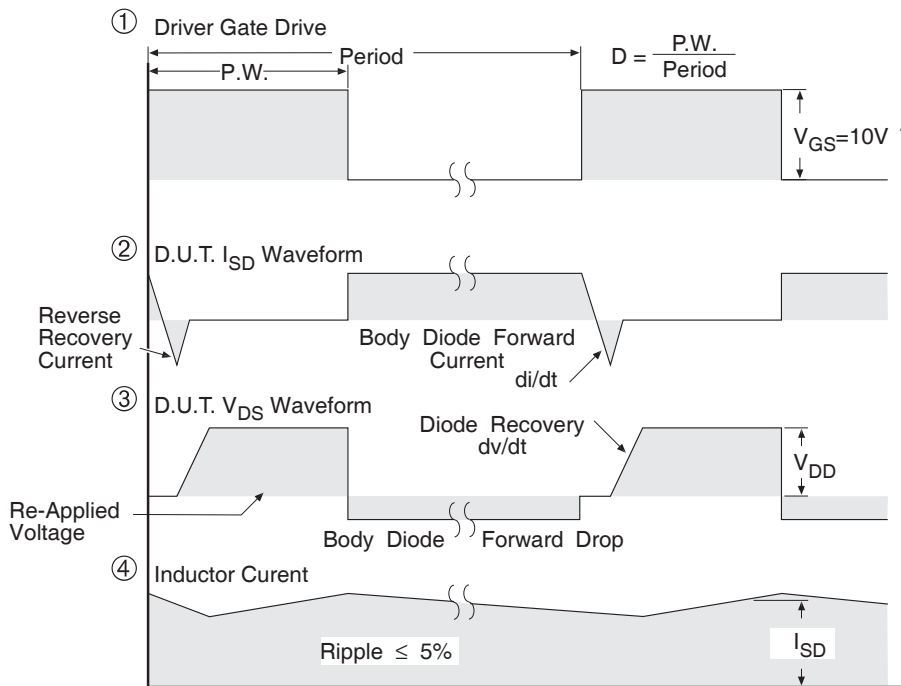
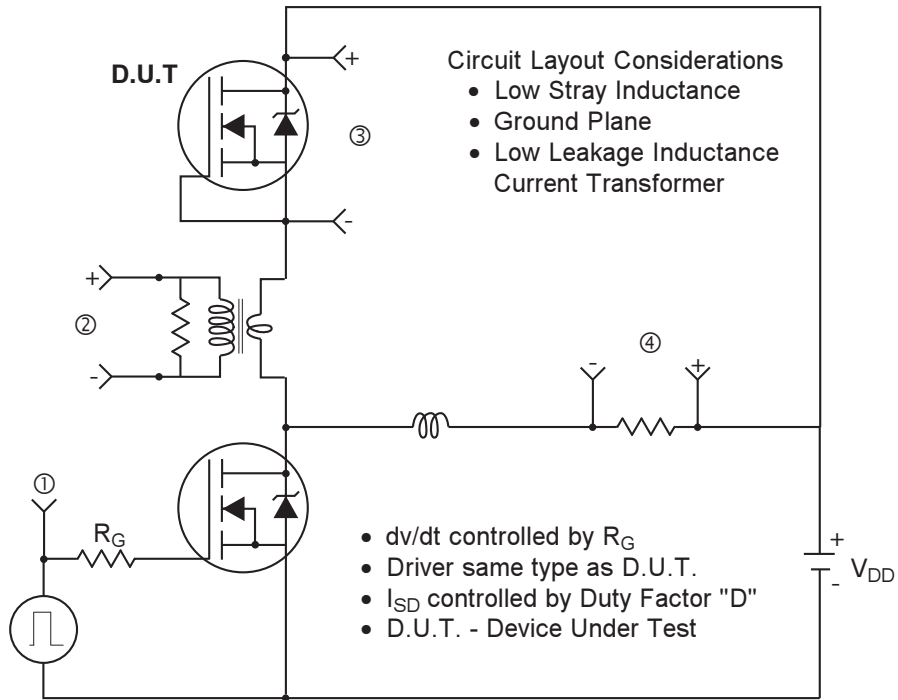


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

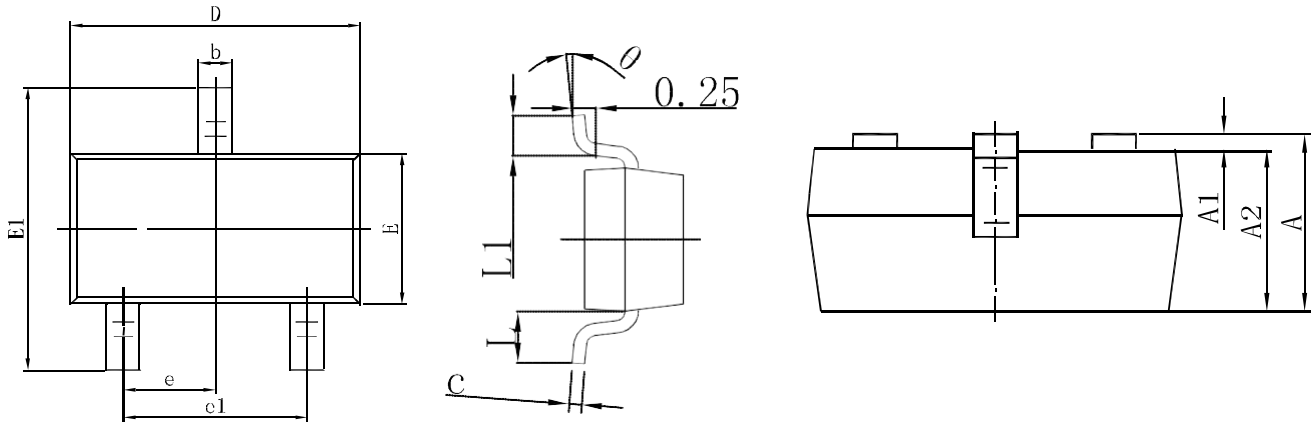
N-CHANNEL POWER MOSFET

Peak Diode Recovery dv/dt Test Circuit

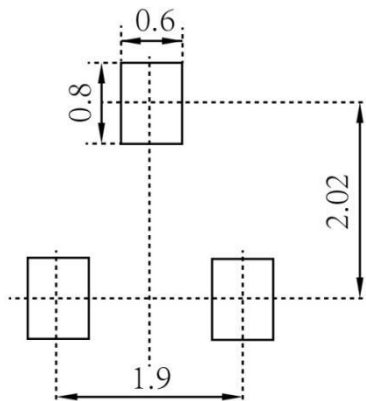


* $V_{GS} = 5V$ for Logic Level Devices

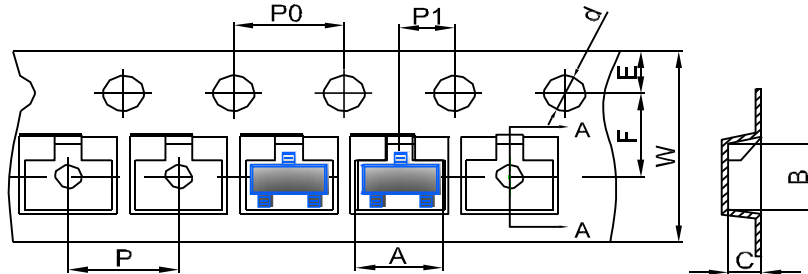
Fig 12. For N-Channel HEXFETS

N-CHANNEL POWER MOSFET
SOT-23 Package Outline Dimensions


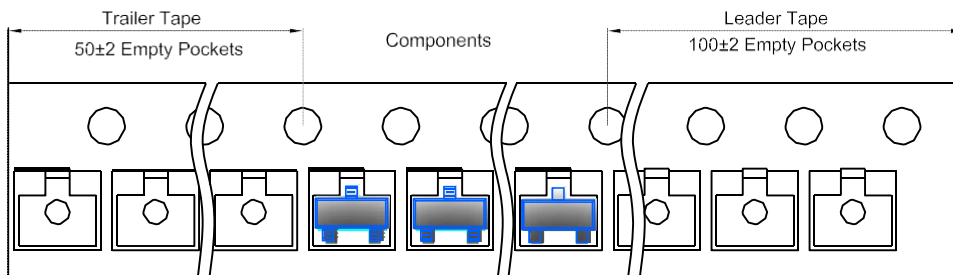
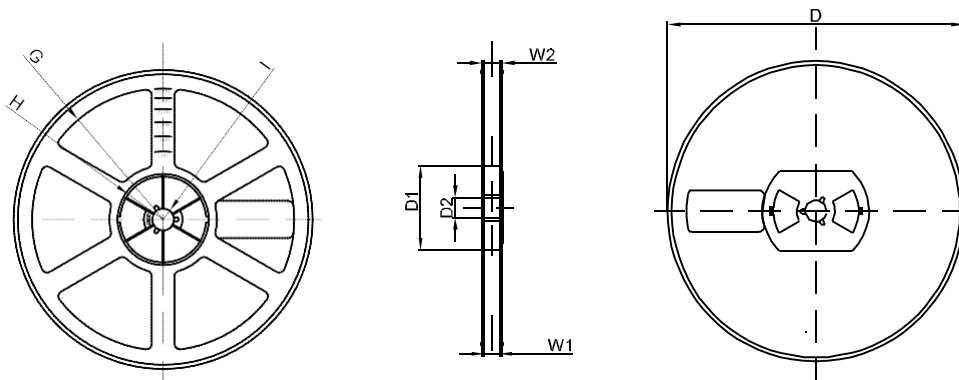
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		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

N-CHANNEL POWER MOSFET
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