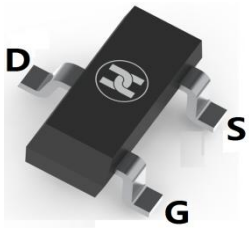
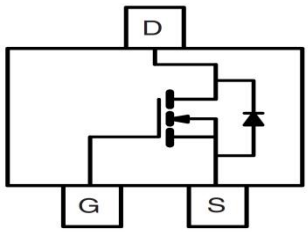
HIGH VOLTAGE MOSFET (N-CHANNEL)



SOT-23



FEATURES

- Low on-resistance:V_{DS}=240V,$R_{DS(ON)}$=11Ω@V_{GS}=10V,I_D=0.27A
- Low Input Capacitance
- Fast Switching Speed
- Low Gate Threshold Voltage
- Surface Mount device

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°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	240	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current	I_D	0.27	A
Pulsed drain current (10μs Pulse, Duty Cycle ≤1%)	I_{DM}	0.8	A
Maximum Body Diode Continuous Current	I_S	0.8	A
Peak diode recovery dv/dt	dv/dt	6.0	V/ns
Power dissipation	P_D	1.2	W
Thermal resistance from Junction to ambient	$R_{\theta JA}$	166	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	35	°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	Uni	Conditions
STATIC CHARACTERISTICS						
Drain-Source breakdown voltage	$V_{(BR)DSS}$	240			V	V_{GS}=0V, I_D=250μA
Zero gate voltage drain current	I_{DSS}			100	nA	V_{DS}=240V, V_{GS}=0V
Gate-body leakage current	I_{GSS}			±100	nA	V_{DS}=0V, V_{GS}=±20V
Gate-threshold voltage (note 1)	$V_{GS(th)}$	1.0	2.0	3.0	V	V_{DS}=V_{GS}, I_D=250μA
Drain-source on-resistance (note 1)	$R_{DS(ON)}$		3.7	11	Ω	V_{GS}=10V, I_D=0.3A
			4.0	12	Ω	V_{GS}=4.5V, I_D=0.2A
Diode forward voltage (note 1)	V_{SD}		0.7	1.2	V	I_S=0.1A, V_{GS}=0V
DYNAMIC CHARACTERISTICS						
Input capacitance	C_{iss}		76.8		pF	V_{DS}=25V, V_{GS}=0V, f=1MHz
Output capacitance	C_{oss}		6.9		pF	
Reverse transfer capacitance	C_{rss}		4.1		pF	
Gate Resistance	R_g		17		Ω	V_{DS}=0V, V_{GS}=0V, f=1MHz
Total gate charge	Q_g		3.7		nC	V_{DS}=192V,V_{GS}=10V,I_D=0.1A
Gate-source charge	Q_{gs}		0.3		nC	
Gate-drain charge	Q_{gd}		2.1		nC	
Turn-on delay time	$t_{d(on)}$		4.8		nS	V_{DS}=120V, V_{GS}=10V, R_{GEN}=6.0Ω, I_D=0.1A
Turn-on rise time	t_r		4.7		nS	
Turn-off delay time	$t_{d(off)}$		17.5		nS	
Turn-off fall time	t_f		102.3		nS	
Reverse Recovery Time	t_{rr}		45.6			V_R=100V,I_F=1.0A,di/dt=100A/μs
Reverse Recovery Charge	Q_{rr}		51.6			

Note:1. Pulse test

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Typical Characteristics

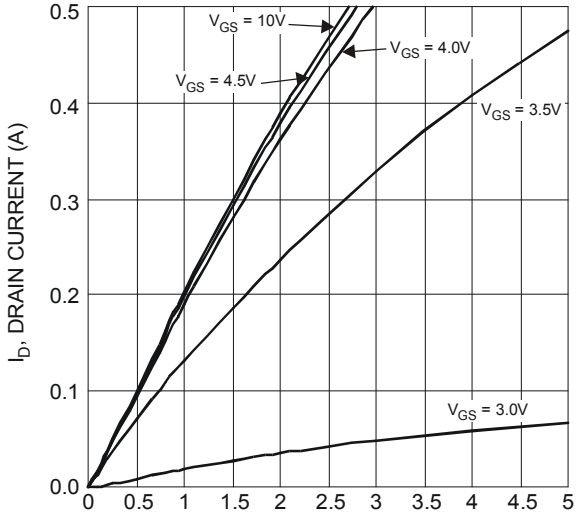


Figure 1 Typical Output Characteristics

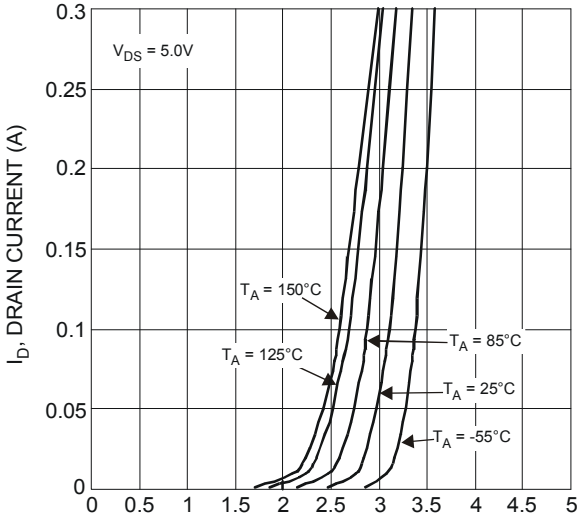


Figure 2 Typical Transfer Characteristics

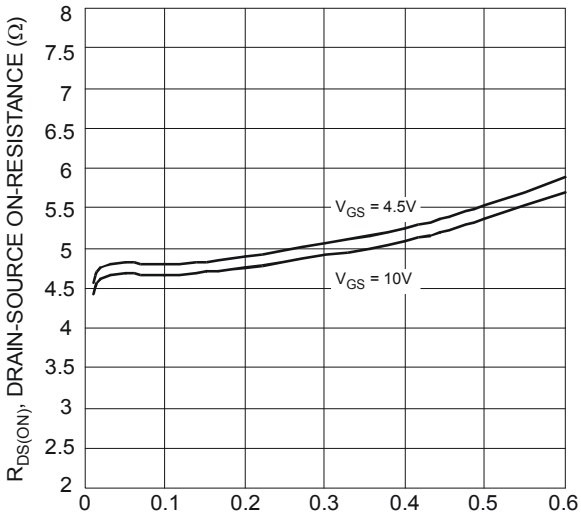


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

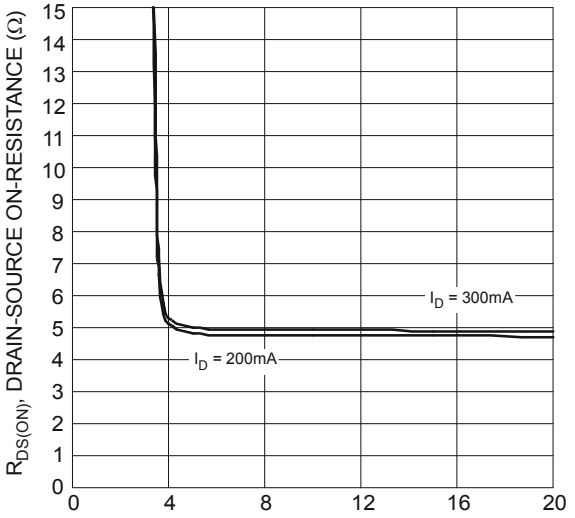


Figure 4 Typical Transfer Characteristics

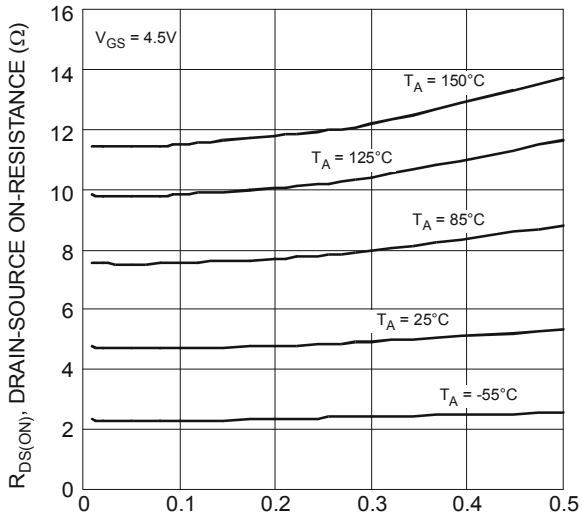


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

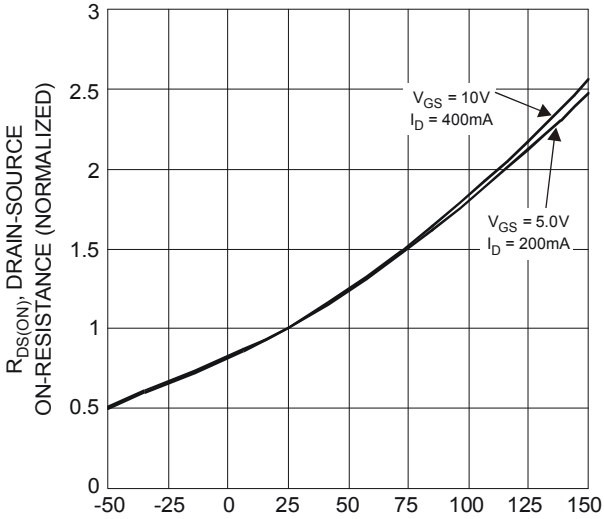


Figure 6 On-Resistance Variation with Temperature

HIGH VOLTAGE MOSFET (N-CHANNEL)

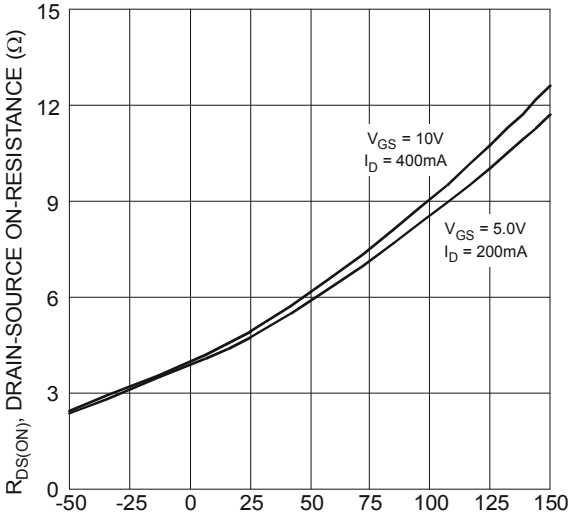


Figure 7 On-Resistance Variation with Temperature

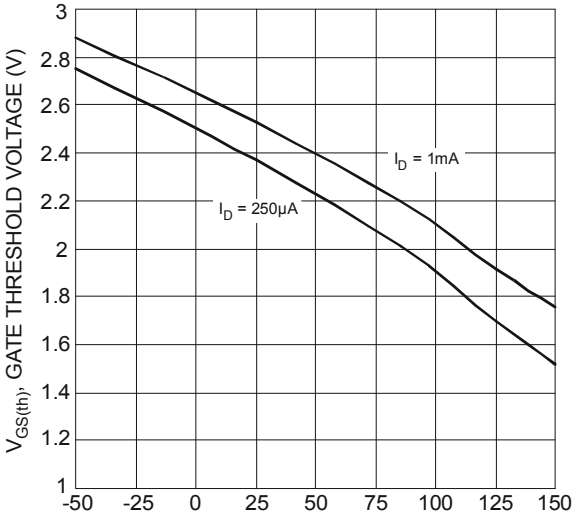


Figure 8 Gate Threshold Variation vs. Ambient Temperature

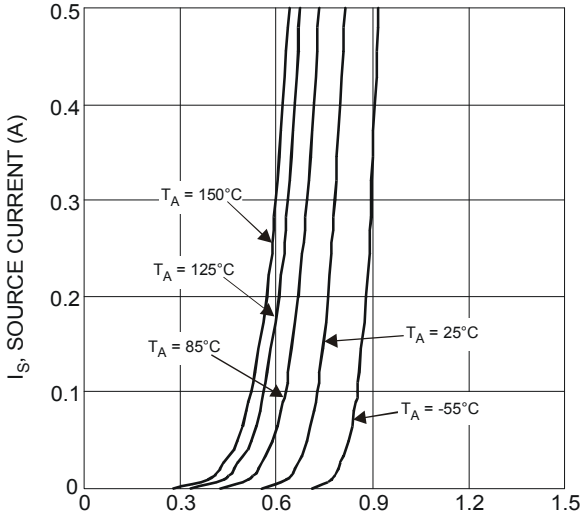


Figure 9 Diode Forward Voltage vs. Current

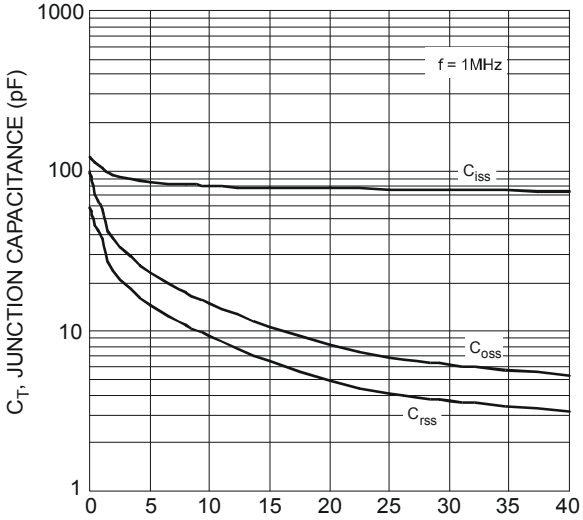


Figure 10 Typical Junction Capacitance

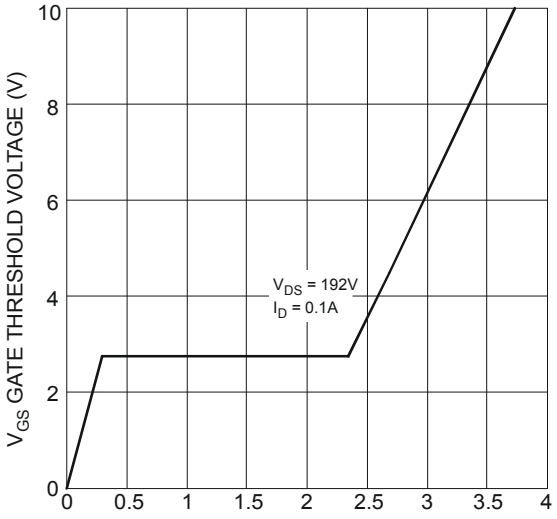


Figure 11 Gate Charge

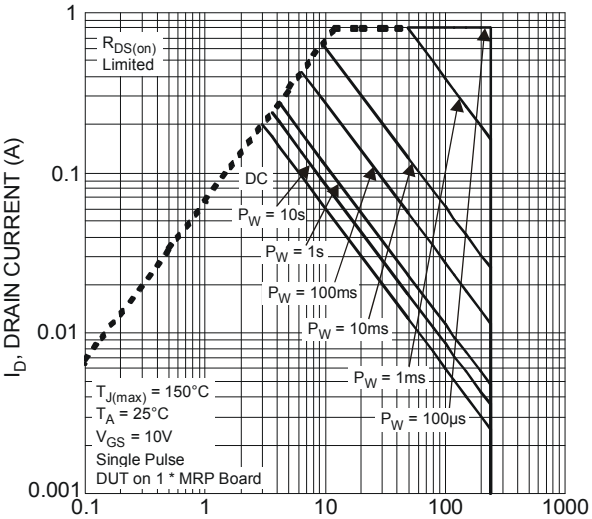


Figure 12 SOA, Safe Operation Area

HIGH VOLTAGE MOSFET (N-CHANNEL)

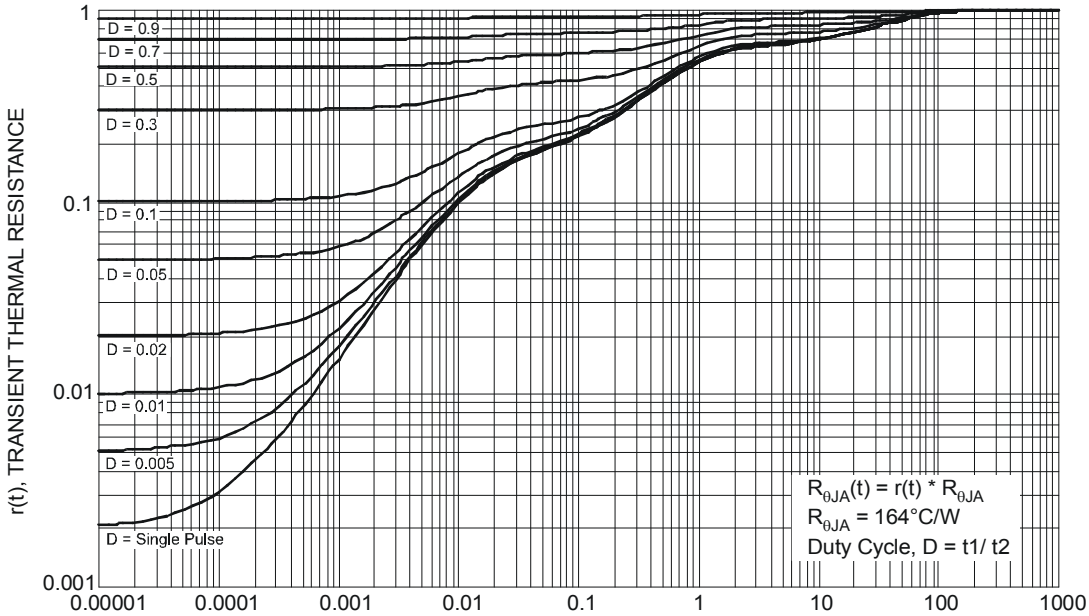
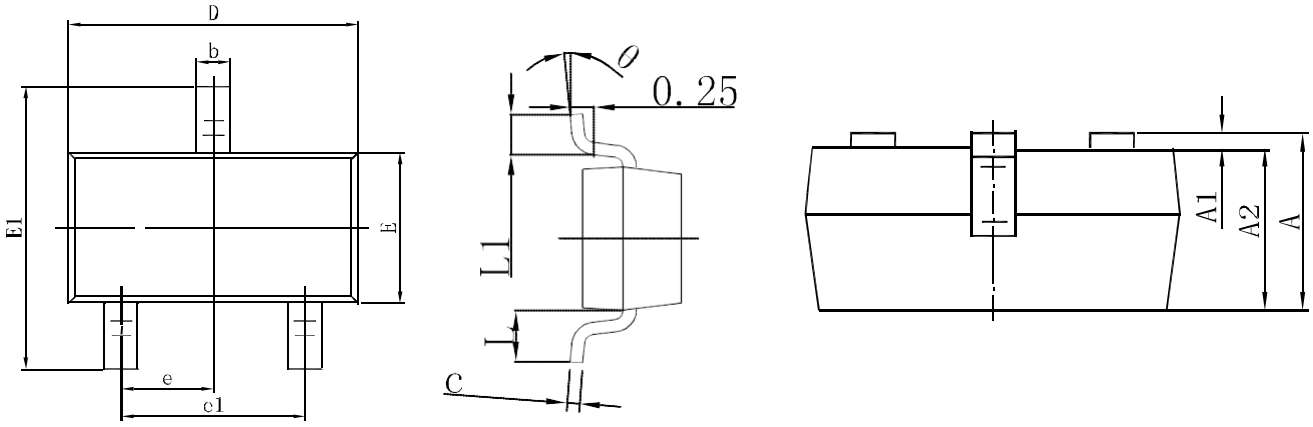


Figure 13 Transient Thermal Resistance

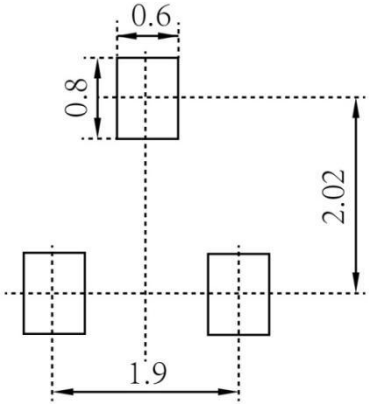
HIGH VOLTAGE MOSFET (N-CHANNEL)

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
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1.Controlling dimension: in millimeters

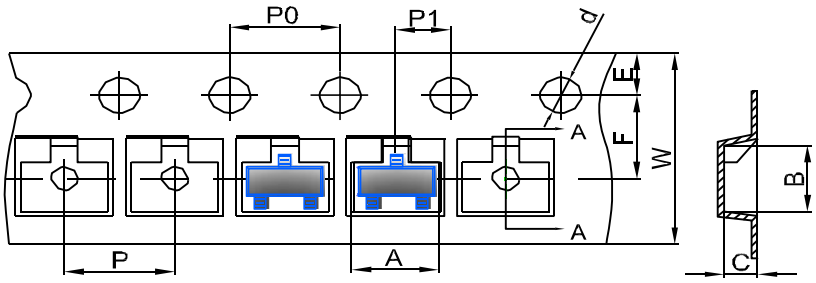
2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only

HIGH VOLTAGE MOSFET (N-CHANNEL)

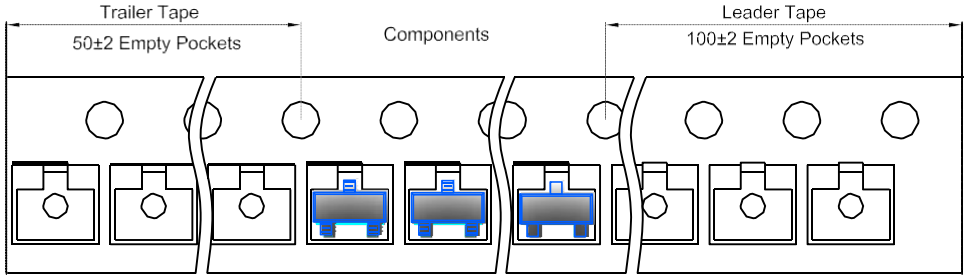
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

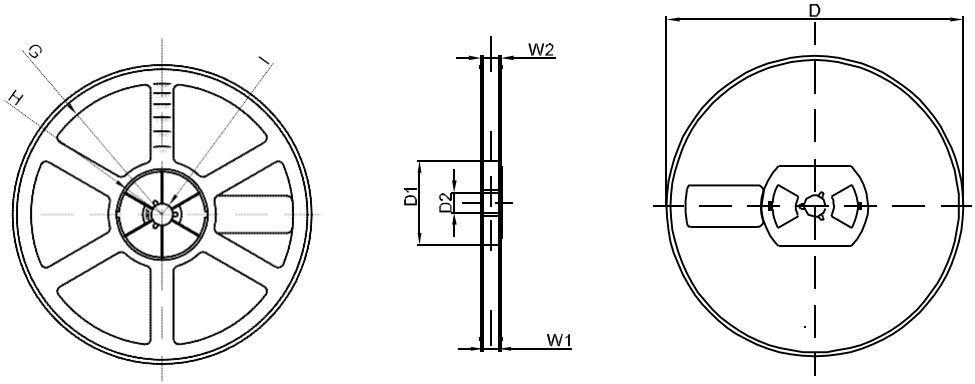


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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