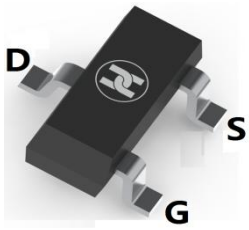
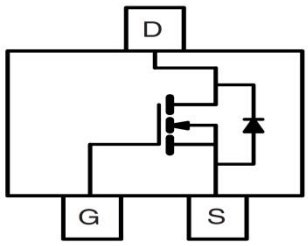
HIGH VOLTAGE MOSFET (N-CHANNEL)

FEATURES

- Low on-resistance:V_{DS}=130V,$R_{DS(ON)}$=0.75Ω@V_{GS}=10V,I_D=1.0A
- Low Input Capacitance
- Fast Switching Speed
- Low Gate Threshold Voltage
- 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)

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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current	I_D	1.0	A
Pulsed drain current (10μs Pulse, Duty Cycle ≤1%)	I_{DM}	3.3	A
Maximum Body Diode Continuous Current	I_S	1.0	A
Power dissipation	P_D	1.26	W
Thermal resistance from Junction to ambient	$R_{\theta JA}$	163	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	17.3	°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
STATIC CHARACTERISTICS						
Drain-Source breakdown voltage	$V_{(BR)DSS}$	130			V	V_{GS}=0V, I_D=250μA
Zero gate voltage drain current	I_{DSS}			100	nA	V_{DS}=120V, V_{GS}=0V
Gate-body leakage current	I_{GSS}			±100	nA	V_{DS}=0V, V_{GS}=±20V
Gate-threshold voltage (note 1)	$V_{GS(th)}$	2.0	2.7	4.0	V	V_{DS}=V_{GS}, I_D=250μA
Drain-source on-resistance (note 1)	$R_{DS(ON)}$		410	750	mΩ	V_{GS}=10V, I_D=2.0A
			430	850	mΩ	V_{GS}=6.0V, I_D=2.0A
Diode forward voltage (note 1)	V_{SD}		0.8	1.2	V	I_S=1.0A, V_{GS}=0V
DYNAMIC CHARACTERISTICS						
Input capacitance	C_{iss}		231		pF	V_{DS}=25V, V_{GS}=0V, f=1MHz
Output capacitance	C_{oss}		19		pF	
Reverse transfer capacitance	C_{rss}		11		pF	
Gate Resistance	R_g		2.3		Ω	V_{DS}=0V, V_{GS}=0V, f=1MHz
Total gate charge	Q_g		5.6		nC	V_{DS}=104V,V_{GS}=10V,I_D=2.0A
Gate-source charge	Q_{gs}		0.8		nC	
Gate-drain charge	Q_{gd}		2.0		nC	
Turn-on delay time	$t_{d(on)}$		2.3		nS	V_{DS}=65V, V_{GS}=10V, R_{GEN}=6.0Ω,I_D=2.0A
Turn-on rise time	t_r		1.7		nS	
Turn-off delay time	$t_{d(off)}$		6.6		nS	
Turn-off fall time	t_f		1.7		nS	
Reverse Recovery Time	t_{rr}		26		nS	I_F=1.0A,dI/dt=100A/μS,V_R=100V
Reverse Recovery Charge	Q_{rr}		21		nC	

Note:1. Pulse test

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Typical Characteristics

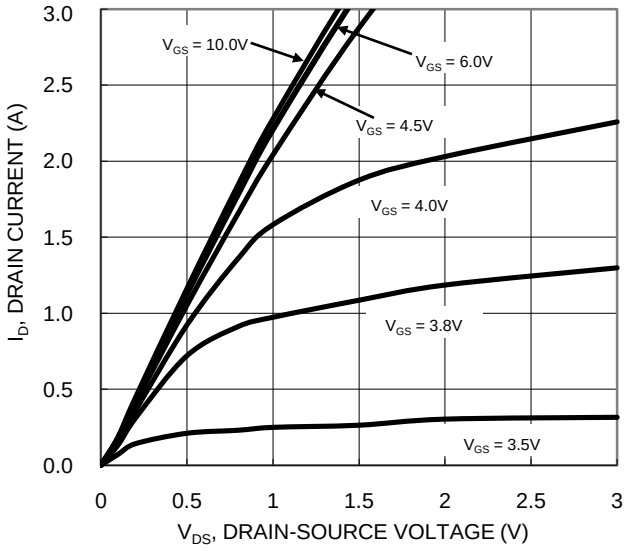

Figure 1. Typical Output Characteristic

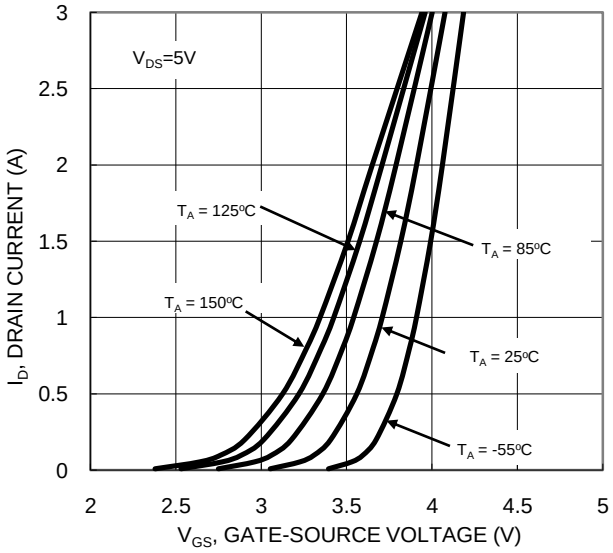

Figure 2. Typical Transfer Characteristic

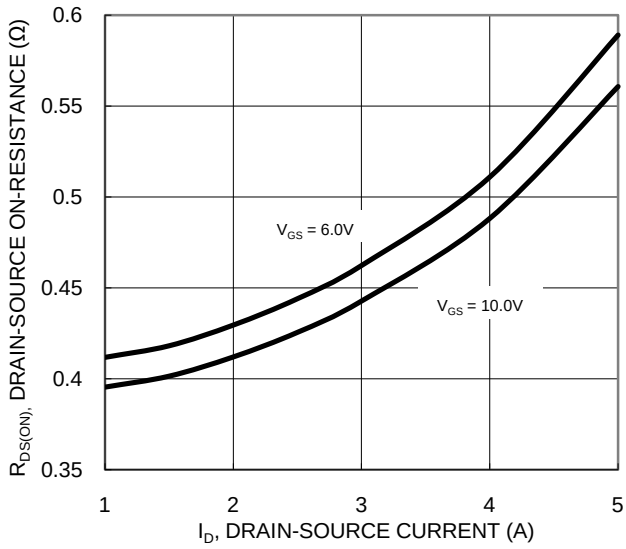

Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

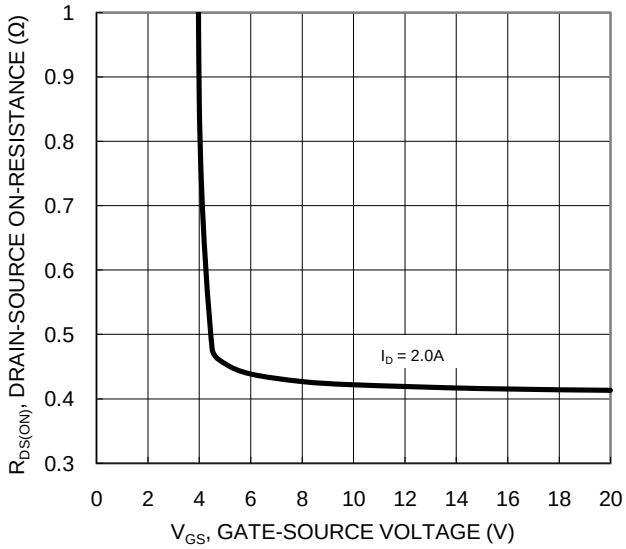

Figure 4. Typical Transfer Characteristic

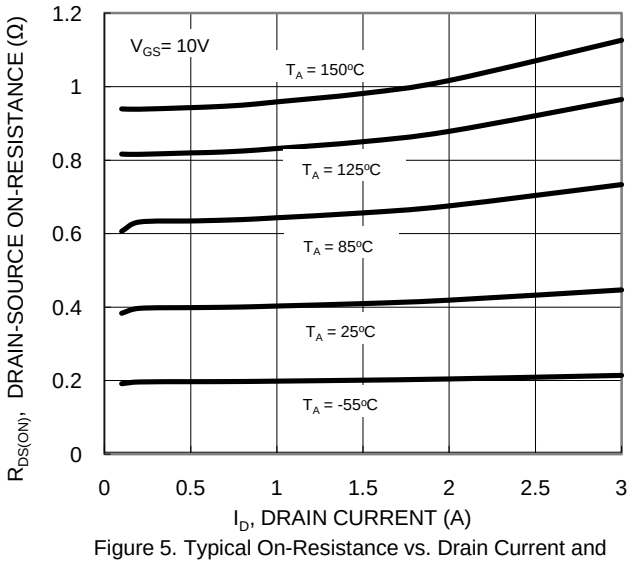

Figure 5. Typical On-Resistance vs. Drain Current and Temperature

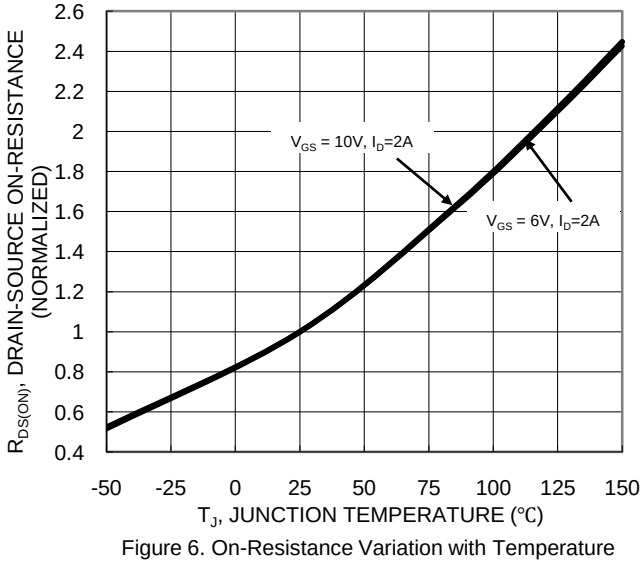

Figure 6. On-Resistance Variation with Temperature

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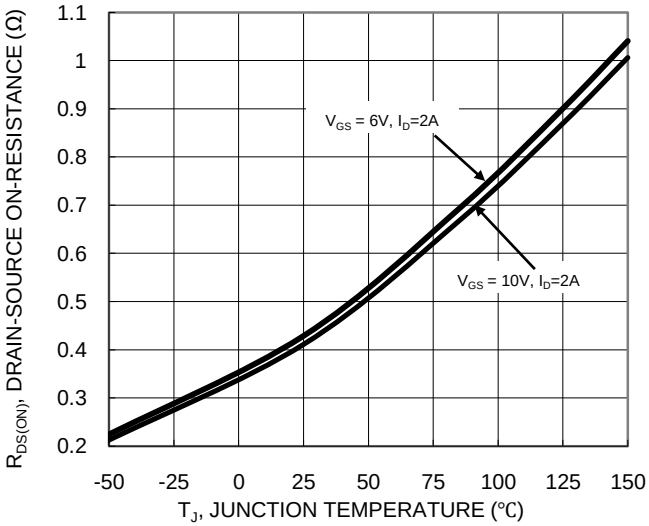

Figure 7. On-Resistance Variation with Temperature

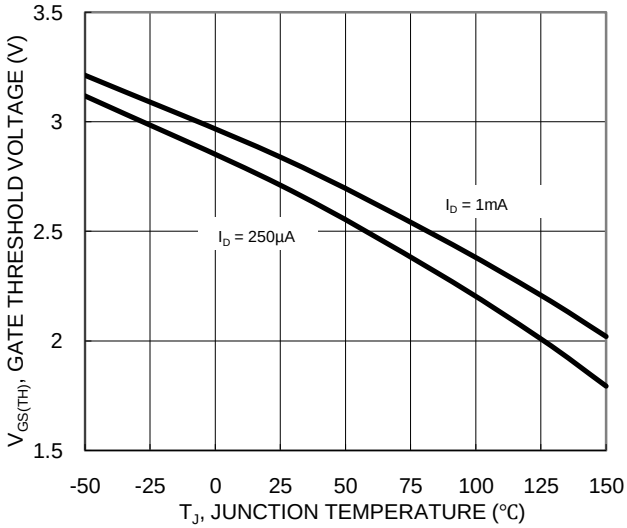

Figure 8. Gate Threshold Variation vs. Junction Temperature

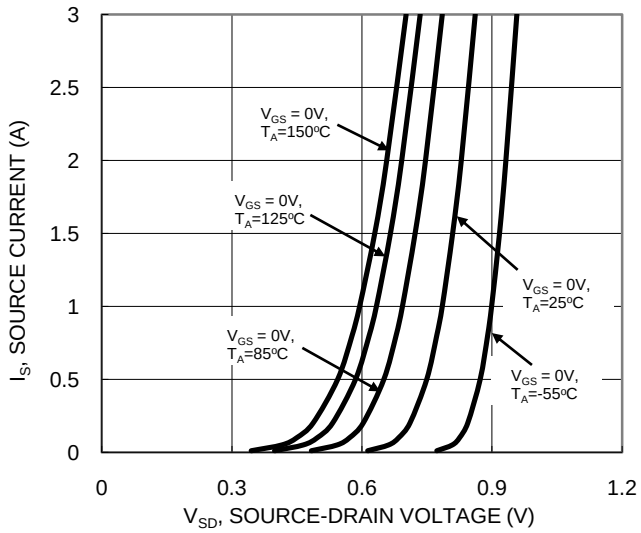

Figure 9. Diode Forward Voltage vs. Current

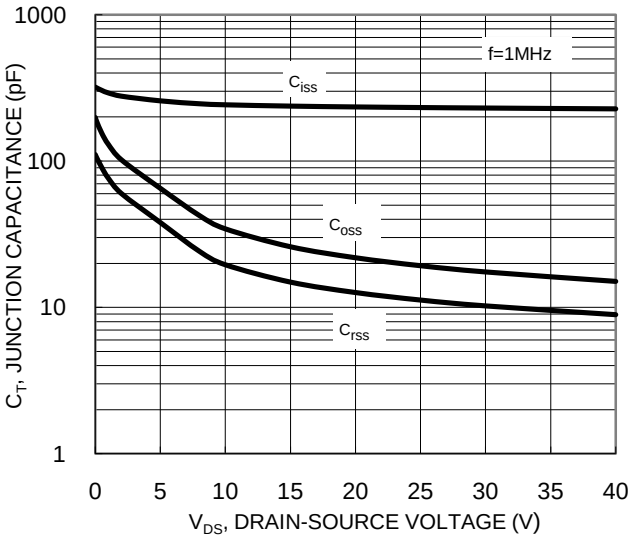

Figure 10. Typical Junction Capacitance

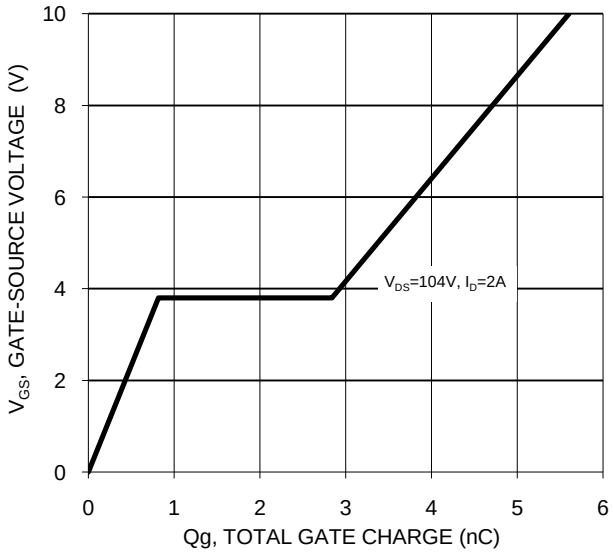

Figure 11. Gate Charge

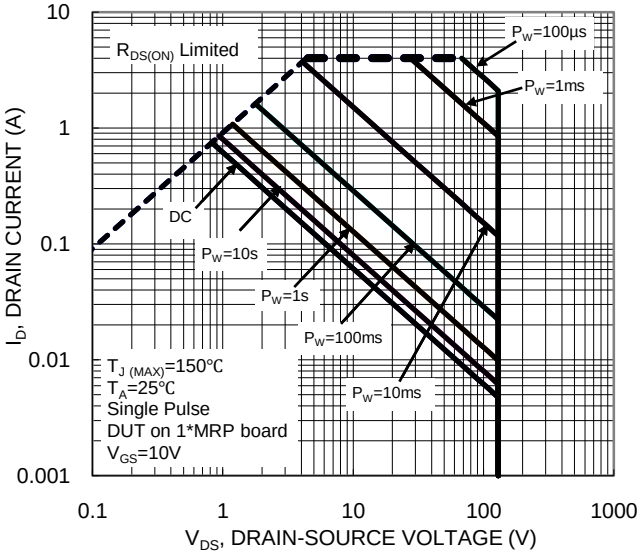

Figure 12. SOA, Safe Operation Area

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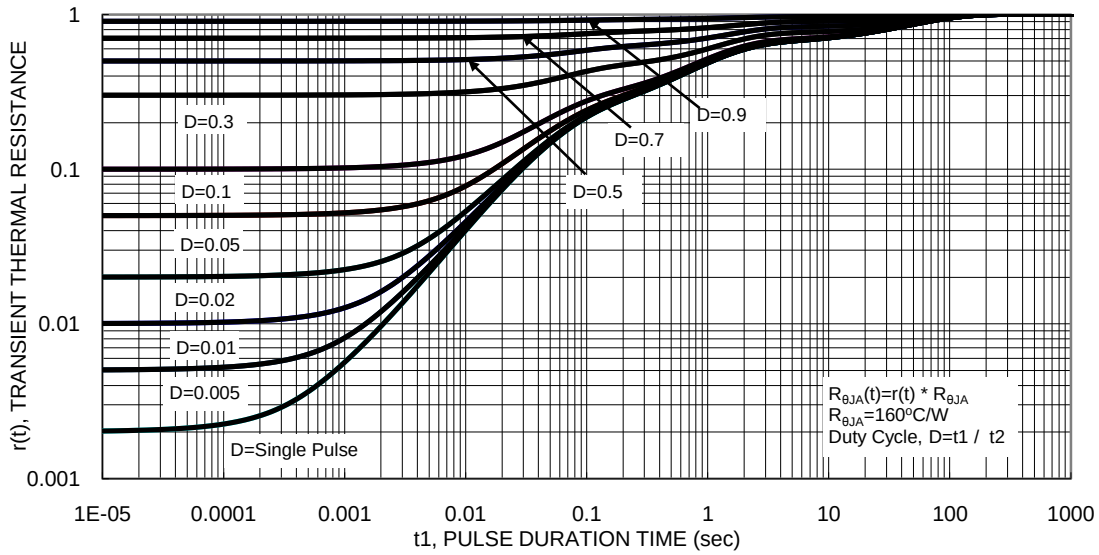

Figure 13. Transient Thermal Resistance

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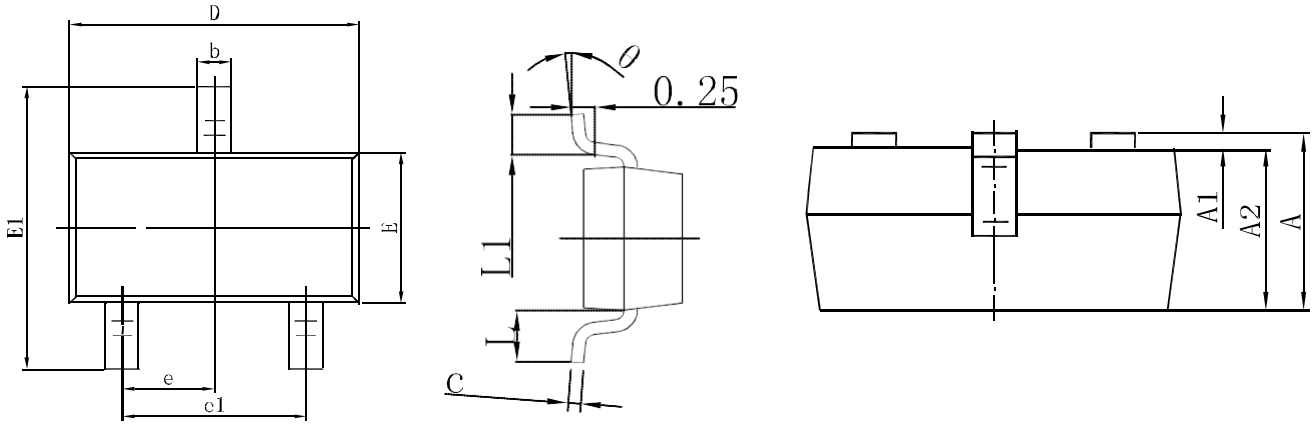
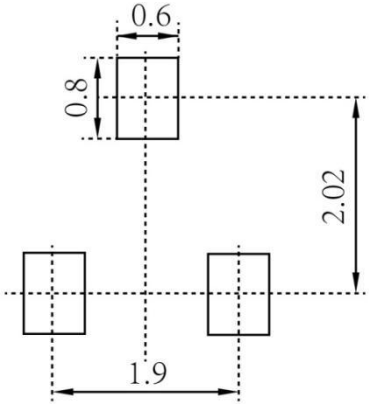
SOT-23 Package Outline Dimensions



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

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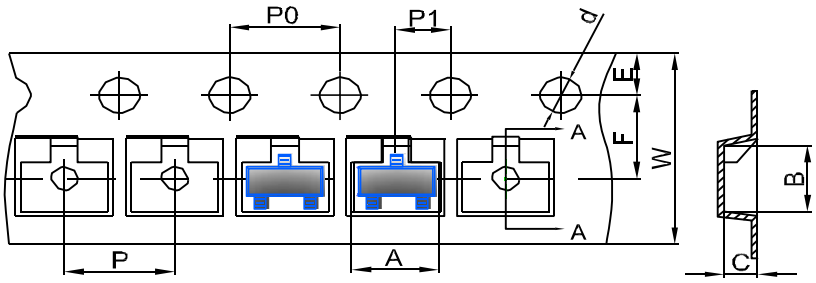
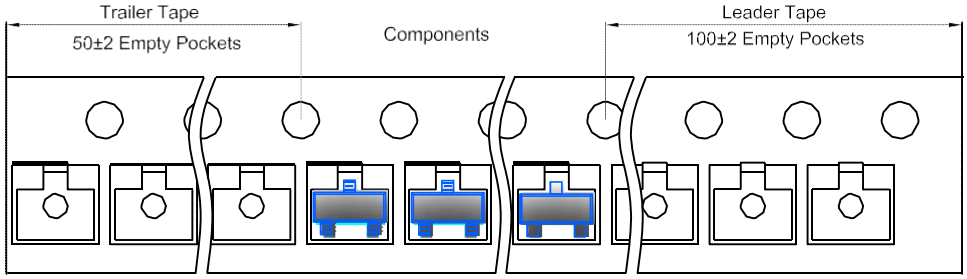
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

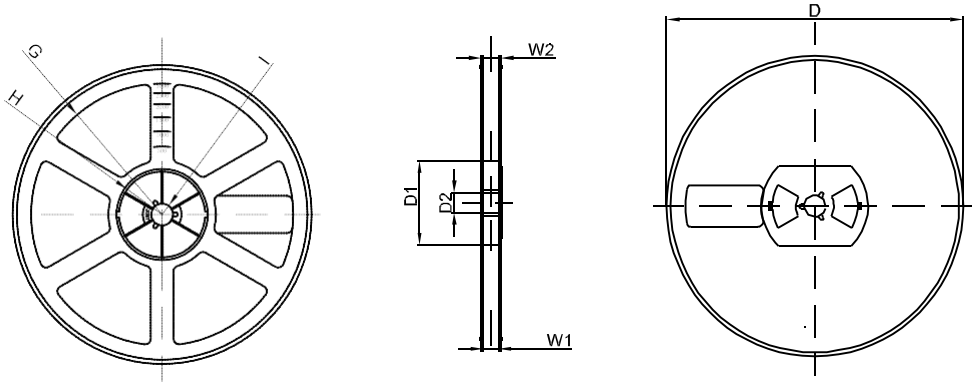


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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