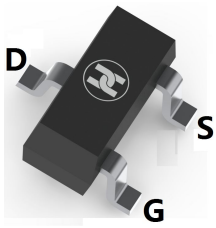
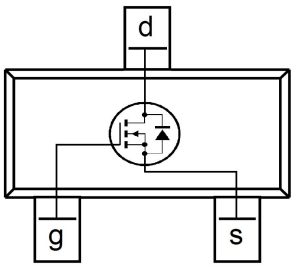
MOSFET (N-CHANNEL)



FEATURES

- V_{DS}=30V, I_D=5.3A, $R_{DS(ON)}$<27mΩ@V_{GS}=10V
- Fast switching
- Ultra Low On-Resistance
- 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)
- Marking:N55G

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

Parameter		Symbol	Value	Unit
Drain-source voltage		V_{DS}	30	V
Gate-source voltage		V_{GS}	±20	V
Continuous drain current	T_A=25°C	I_D	5.3	A
	T_A=70°C		4.3	
Pulsed drain current (Note 1)		I_{DM}	21	A
Power dissipation	T_A=25°C	P_D	1.3	W
	T_A=70°C		0.8	
Linear Derating Factor			0.01	W/°C
Thermal resistance from Junction to ambient		$R_{\theta JA}$*	100	°C/W
Storage and Junction temperature		T_J,T_{STG}	-55 ~+150	°C

*Surface mounted on 1 in square Cu board

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage	$V_{(BR)DSS}$	30			V	V_{GS}=0V, I_D=250μA
Zero gate voltage drain current	I_{DSS}			1	μA	V_{DS}=24V, V_{GS}=0V
				150		V_{DS}=24V, V_{GS}=0V,T_j=125°C
Gate-body leakage current	I_{GSS}			±100	nA	V_{DS}=0V, V_{GS}=±20V
Gate-threshold voltage (note 1)	$V_{GS(th)}$	1.3	1.7	2.3	V	V_{DS}=V_{GS}, I_D=250μA
Drain-source on-resistance(note 1)	$R_{DS(ON)}$		33	40	mΩ	V_{GS}=4.5V, I_D=4.2A
			22	27	mΩ	V_{GS}=10V, I_D=5.2A
Internal Gate Resistance	R_G		2.3		Ω	
Forward transconductance(note 1)	g_{FS}		2.8		S	V_{DS}=10V, I_D=5.2A
Input capacitance	C_{iss}		382		pF	V_{DS}=15V, V_{GS}=0V, f=1MHz
Output capacitance	C_{oss}		84		pF	
Reverse transfer capacitance	C_{rss}		39		pF	
Turn-on delay time	$t_{d(on)}$		5.2		nS	V_{DD}=15V,I_D=1A, R_G=6.8Ω,V_{GS}=4.5V
Turn-on rise time	t_r		4.4		nS	
Turn-off delay time	$t_{d(off)}$		7.4		nS	
Turn-off fall time	t_f		4.4		nS	
Total gate charge	Q_g		2.6		nC	V_{DS}=15V,V_{GS}=4.5V,I_D=5.2A
Gate-source charge	Q_{gs}		0.8		nC	
Gate-drain charge	Q_{gd}		1.1		nC	
Diode forward current(Body Diode)	I_S			1.6	A	
Pulsed Source Current(Body Diode)	I_{SM}			21	A	
Diode forward voltage (note 1)	V_{SD}			1.2	V	I_S=1.6A, V_{GS}=0V,T_j=25°C
Reverse Recovery Time	t_{rr}		11	17	nS	T_J=25°C,V_R=15V,I_F=1.6A, di/dt=100A/μs
Reverse Recovery Charge	Q_{rr}		4.0	6.0	nC	

Note:1. Pulse test ; Pulse width ≤400μs, Duty cycle ≤ 2% .

MOSFET (N-CHANNEL)

Typical Characteristics

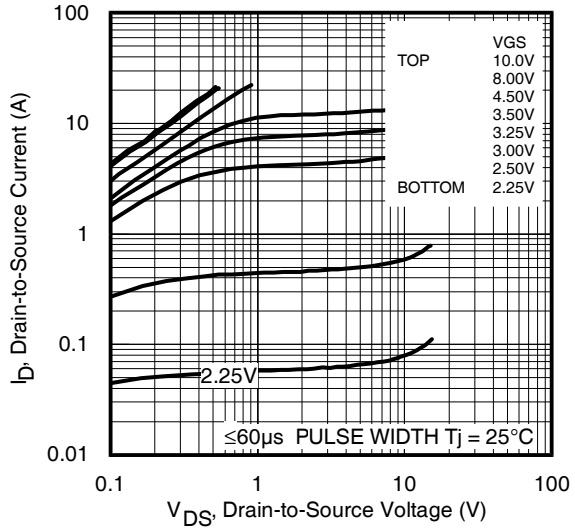


Fig 1. Typical Output Characteristics

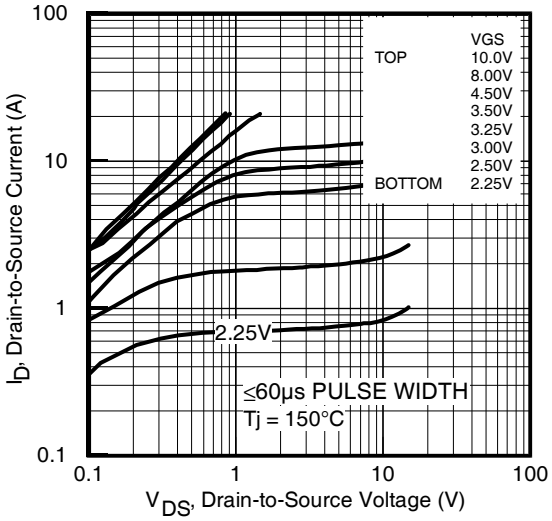


Fig 2. Typical Output Characteristics

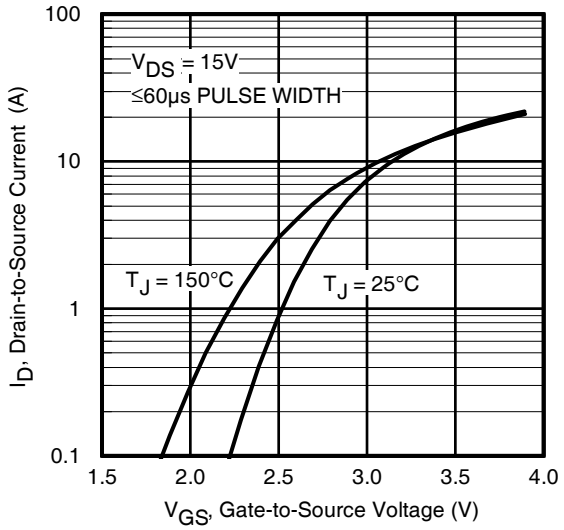


Fig 3. Typical Transfer Characteristics

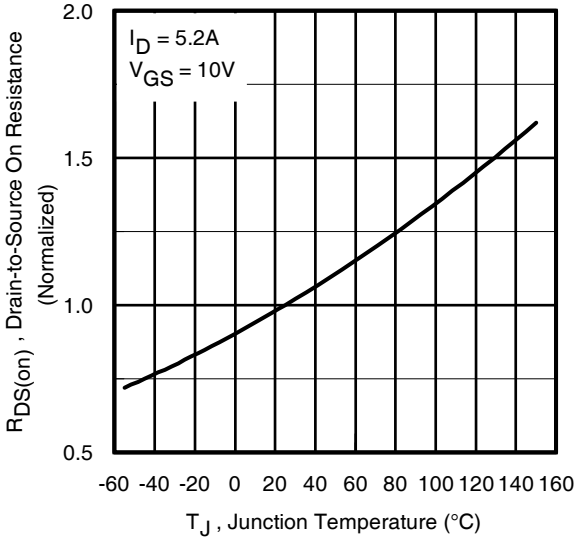


Fig 4. Normalized On-Resistance Vs. Temperature

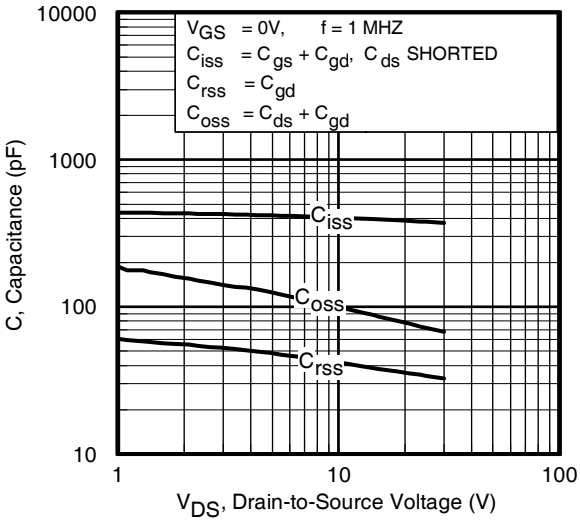


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

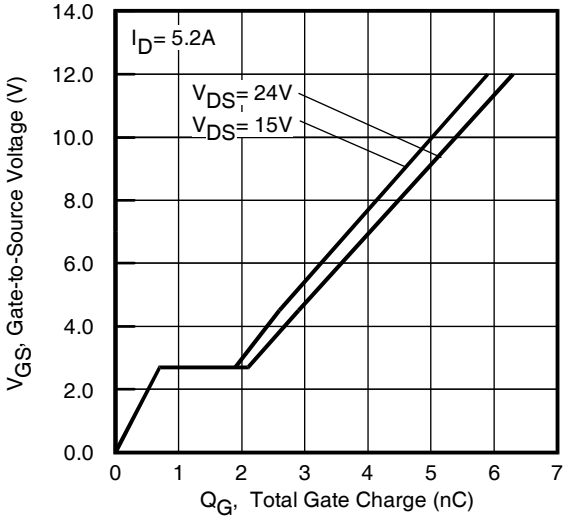


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

MOSFET (N-CHANNEL)

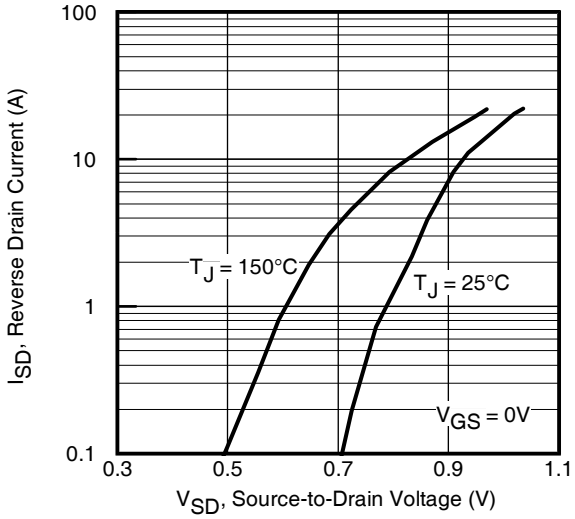


Fig 7. Typical Source-Drain Diode Forward Voltage

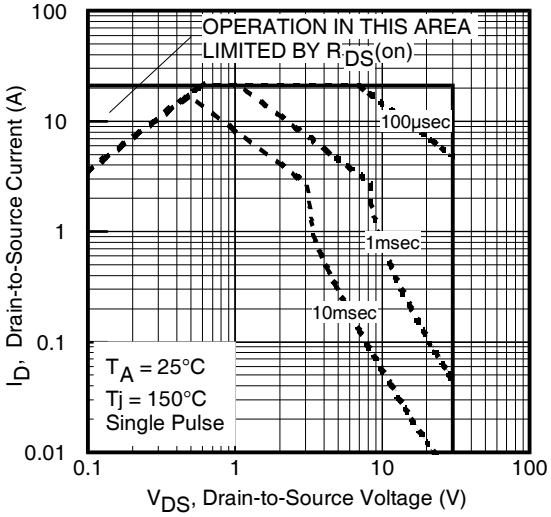


Fig 8. Maximum Safe Operating Area

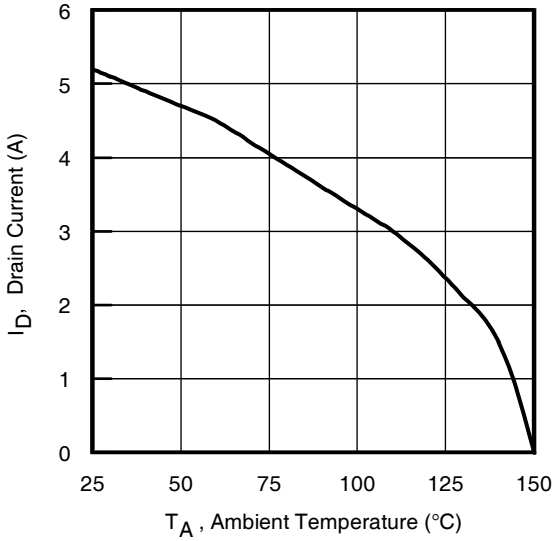


Fig 9. Maximum Drain Current Vs. Ambient Temperature

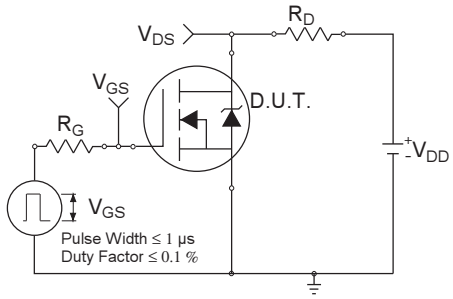


Fig 10a. Switching Time Test Circuit

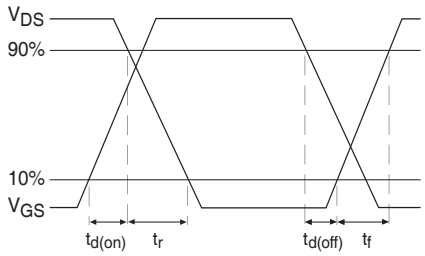


Fig 10b. Switching Time Waveforms

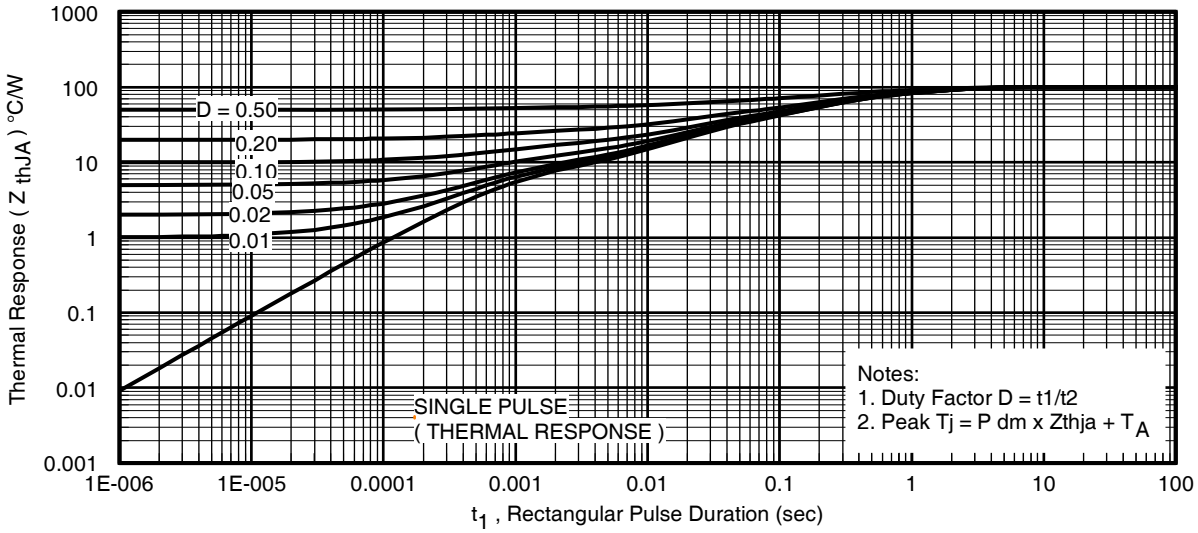


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

MOSFET (N-CHANNEL)

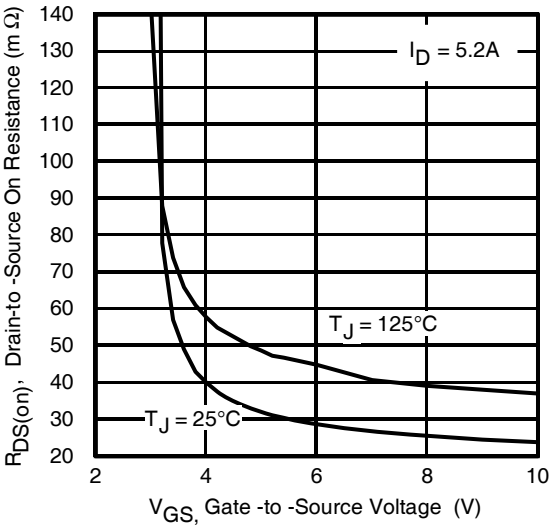


Fig 12. Typical On-Resistance Vs. Gate Voltage

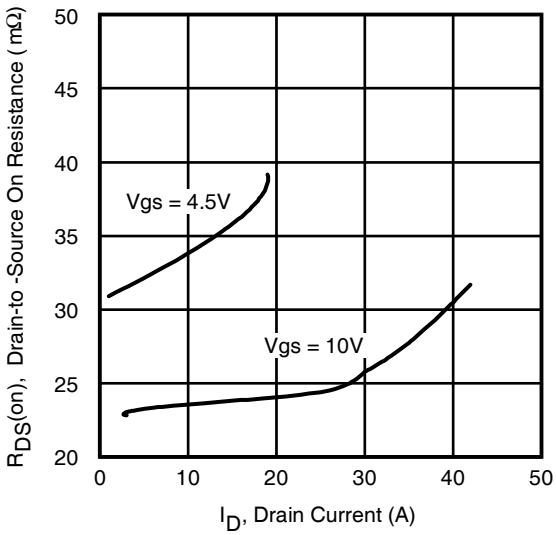


Fig 13. Typical On-Resistance Vs. Drain Current

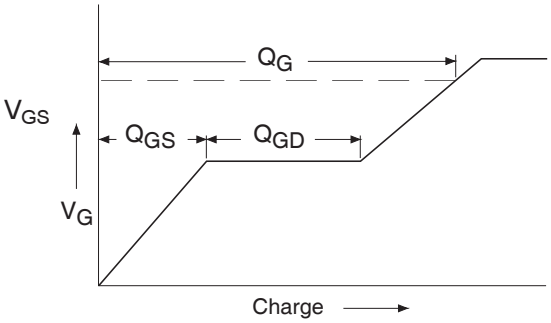


Fig 14a. Basic Gate Charge Waveform

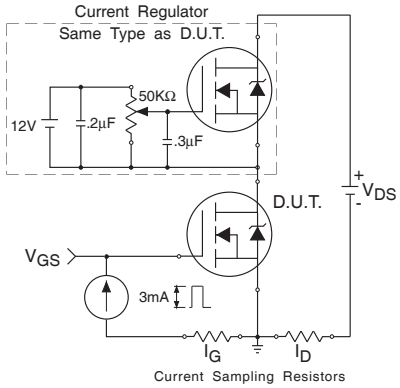


Fig 14b. Gate Charge Test Circuit

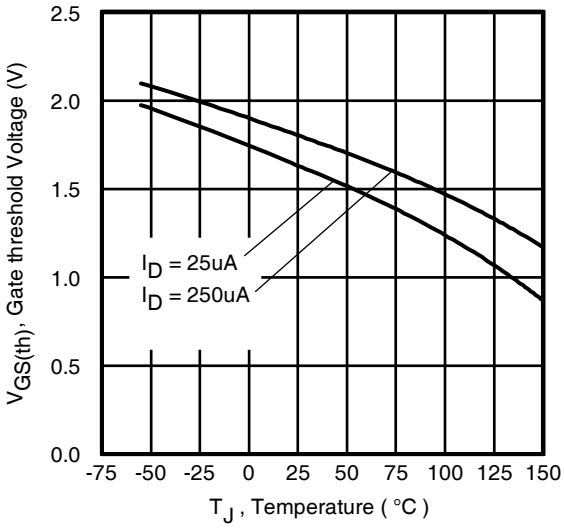


Fig 15. Typical Threshold Voltage Vs. Junction Temperature

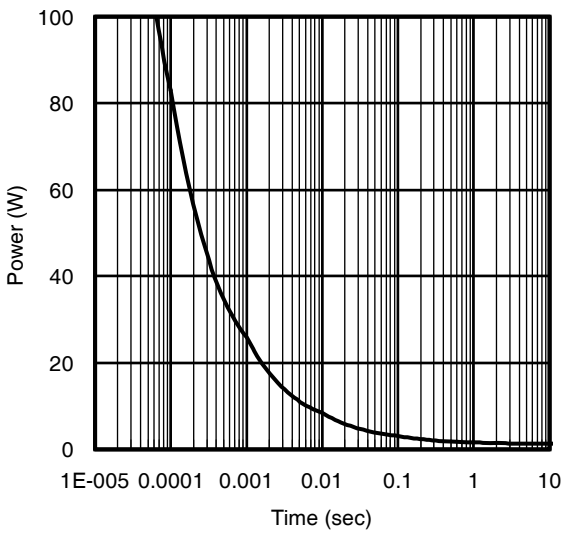
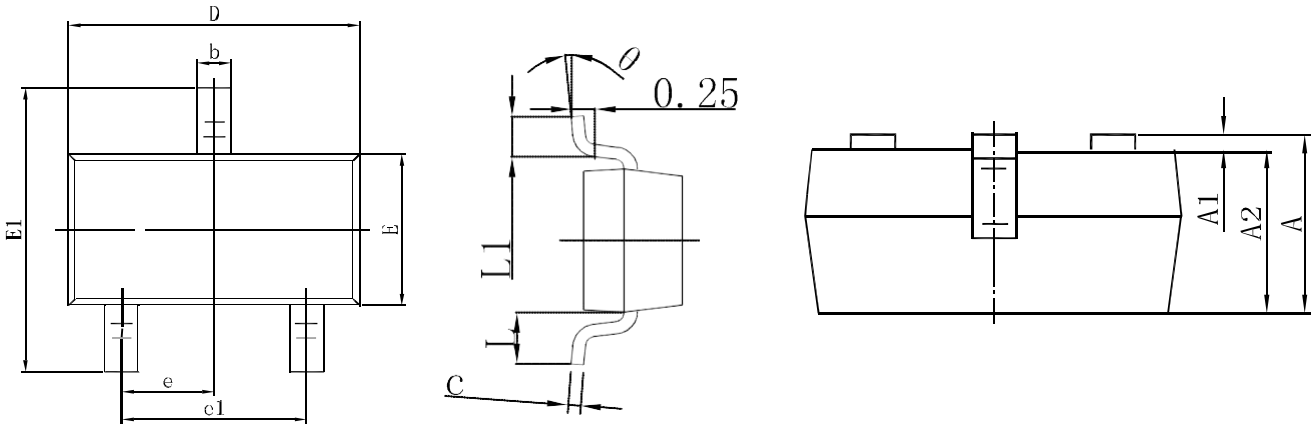


Fig 16. Typical Power Vs. Time

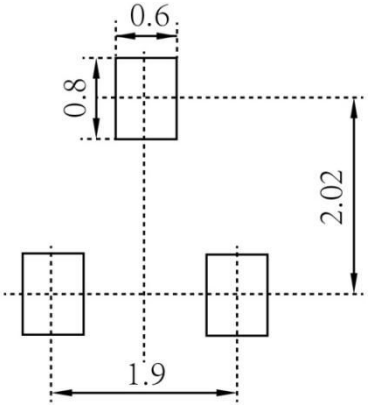
MOSFET (N-CHANNEL)

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:

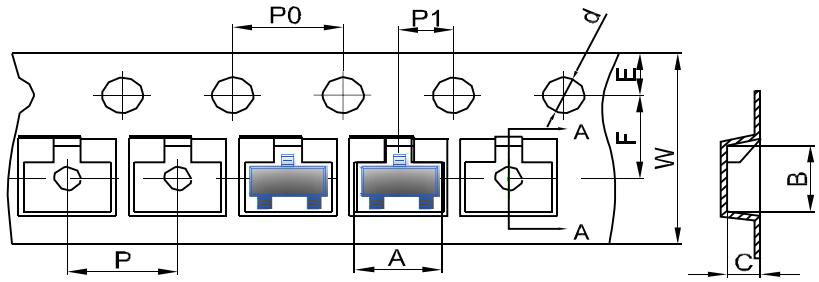
1.Controlling dimension: in millimeters

2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only

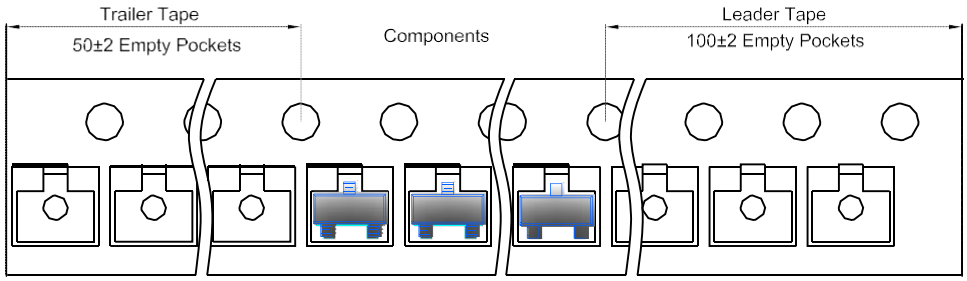
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

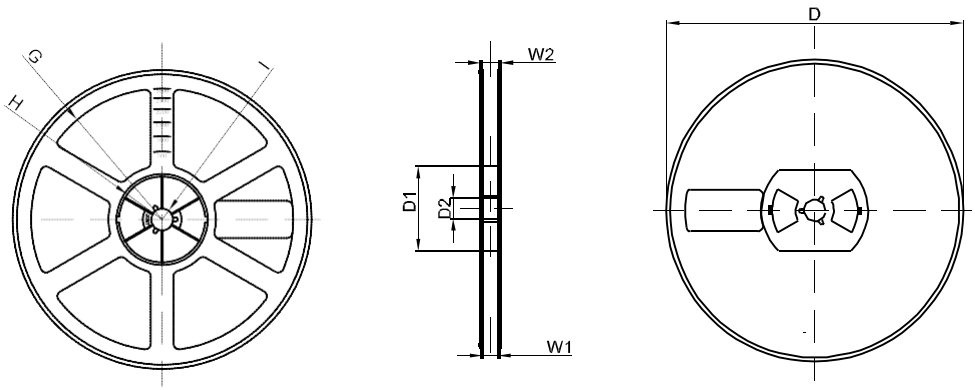


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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