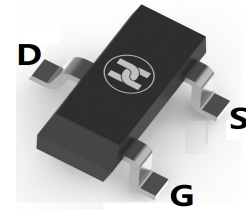


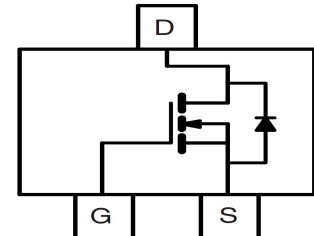
**LOW VOLTAGE MOSFET (N-CHANNEL)**

**FEATURES**

- Low on-resistance:  $V_{DS}=100V, R_{DS(ON)} \leq 630m\Omega @ V_{GS}=10V, I_D=1A$
- For boost converters and synchronous rectifiers applications
- For power supplies and LED backlighting applications
- 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 ( $T_A = 25^\circ C$  unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	100	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current	$T_A=25^\circ C$	$I_D$	1
	$T_A=70^\circ C$	$I_D$	0.8
Pulsed drain current	$I_{DM}^*$	4	A
Power dissipation	$T_A=25^\circ C$	$P_D$	1.4
	$T_A=70^\circ C$	$P_D$	0.9
Thermal resistance from Junction to ambient	$R_{\theta JA}$	125	$^\circ C/W$
Junction temperature	$T_J$	150	$^\circ C$
Storage temperature	$T_{STG}$	-55 ~ +150	$^\circ C$

**ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ C$  unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage	$V_{(BR)DSS}^*$	100			V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current	$I_{DSS}^*$			1	$\mu A$	$V_{DS}=100V, V_{GS}=0V$
Gate-body leakage current	$I_{GSS}^*$			$\pm 100$	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
Gate-threshold voltage	$V_{GS(th)}^*$	1.7	2.3	2.9	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance	$R_{DS(ON)}^*$		514	630	m $\Omega$	$V_{GS}=10V, I_D=1A$
			983	1200	m $\Omega$	$V_{GS}=10V, I_D=1A, T_J=125^\circ C$
			554	720	m $\Omega$	$V_{GS}=4.5V, I_D=0.8A$
On-State Drain Current	$I_{D(ON)}^*$	4			A	$V_{DS}=5V, V_{GS}=10V$
Forward transconductance	$g_{FS}$		2.8		S	$V_{DS}=5V, I_D=1A$
Gate resistance	$R_g$	2.5	5	7.5	$\Omega$	$V_{GS}=0V, V_{DS}=0V, f=1MHz$
Input capacitance	$C_{iss}$		100		pF	$V_{DS}=50V, V_{GS}=0V, f=1MHz$
Output capacitance	$C_{oss}$		13		pF	
Reverse transfer capacitance	$C_{rss}$		5		pF	
Turn-on delay time	$t_{d(on)}$		5		nS	$V_{DS}=50V, V_{GS}=10V, R_{GEN}=3\Omega, R_L=50\Omega$
Turn-on rise time	$t_r$		4		nS	
Turn-off delay time	$t_{d(off)}$		12		nS	
Turn-off fall time	$t_f$		5		nS	
Total gate charge	$Q_g$		2.8	6	nC	$V_{DS}=50V, V_{GS}=10V, I_D=1A$
Gate-source charge	$Q_{gs}$		0.4		nC	
Gate-drain charge	$Q_{gd}$		0.8		nC	
Diode forward voltage	$V_{SD}$		0.9	1.2	V	$I_S=1A, V_{GS}=0V$
Diode forward current	$I_S$			1	A	
Body Diode Reverse Recovery Time	$t_{rr}$		52		nS	$I_F=5.6A, dI/dt=100A/\mu s$
Body Diode Reverse Recovery Charge	$Q_{rr}$		60		nC	$I_F=5.6A, dI/dt=100A/\mu s$

\*Pulse test ; Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 0.5\%$  .

LOW VOLTAGE MOSFET (N-CHANNEL)

Typical Characteristics

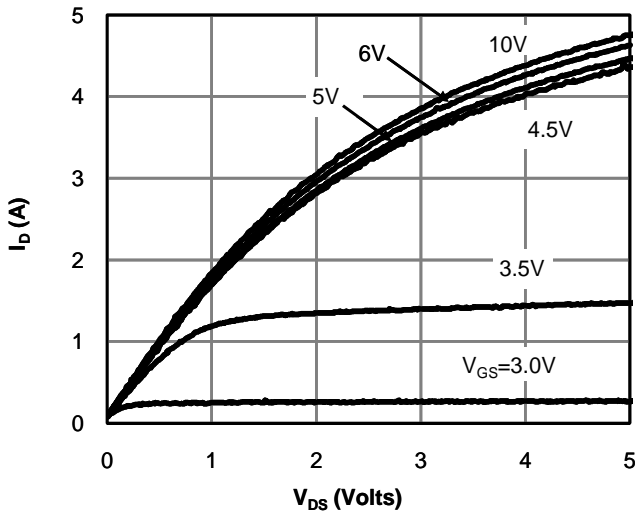


Fig 1: On-Region Characteristics

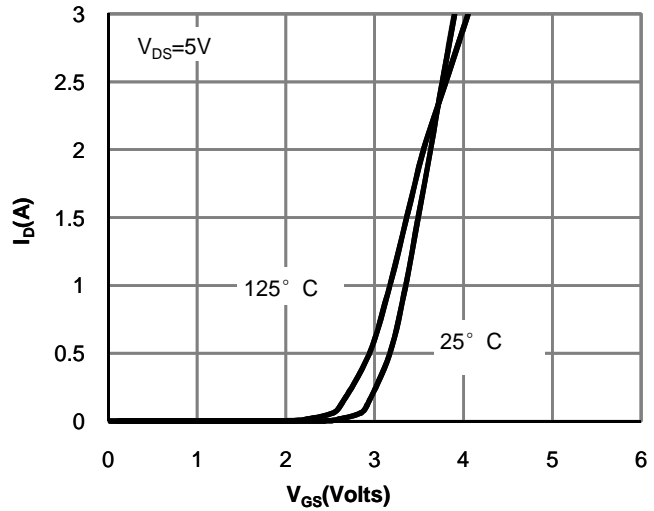


Figure 2: Transfer Characteristics

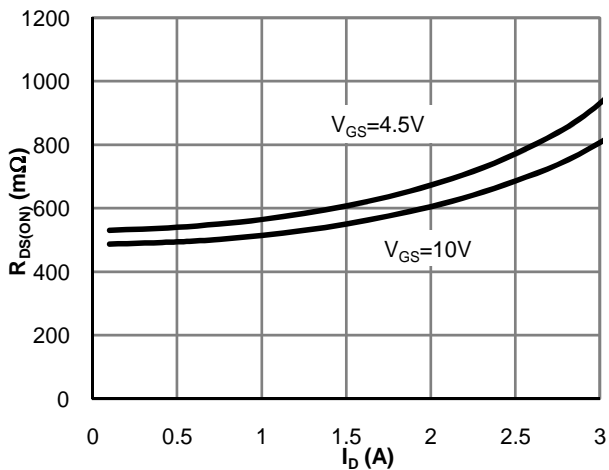


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

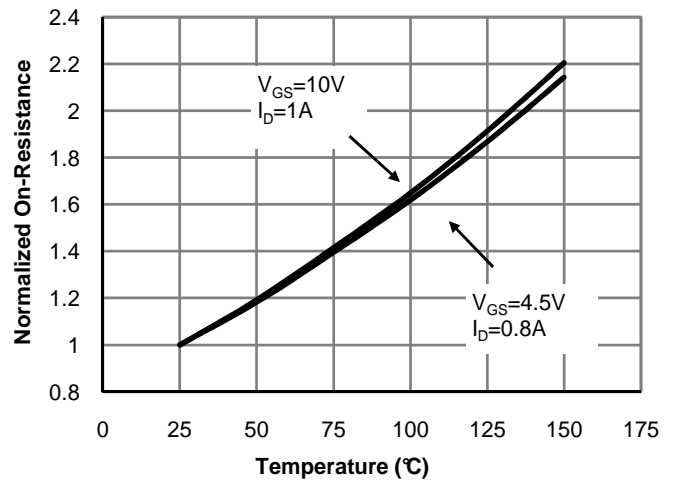


Figure 4: On-Resistance vs. Junction Temperature

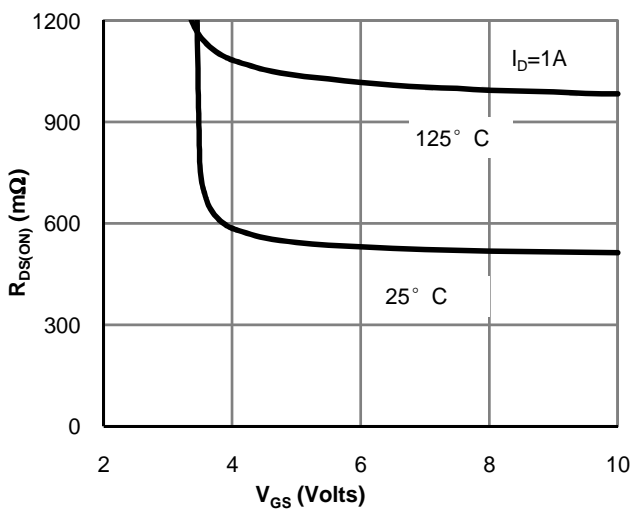


Figure 5: On-Resistance vs. Gate-Source Voltage

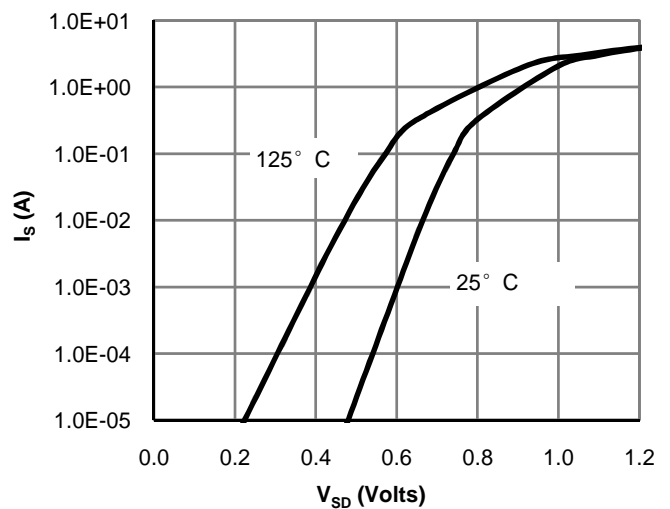
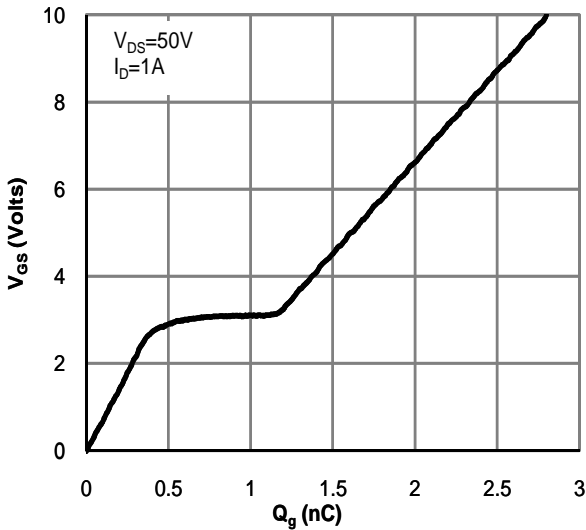
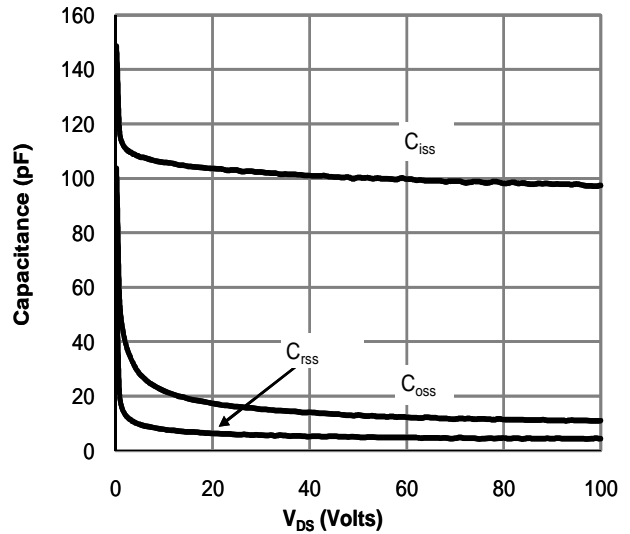


Figure 6: Body-Diode Characteristics

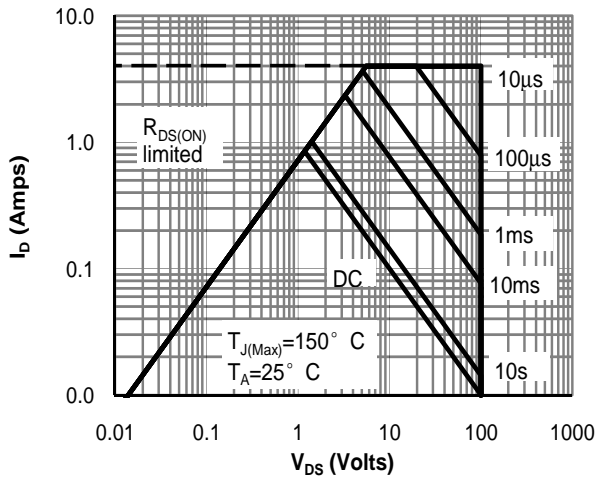
**LOW VOLTAGE MOSFET (N-CHANNEL)**



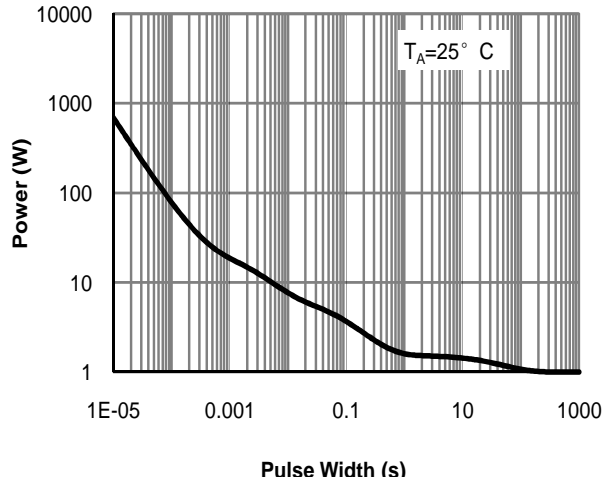
**Figure 7: Gate-Charge Characteristics**



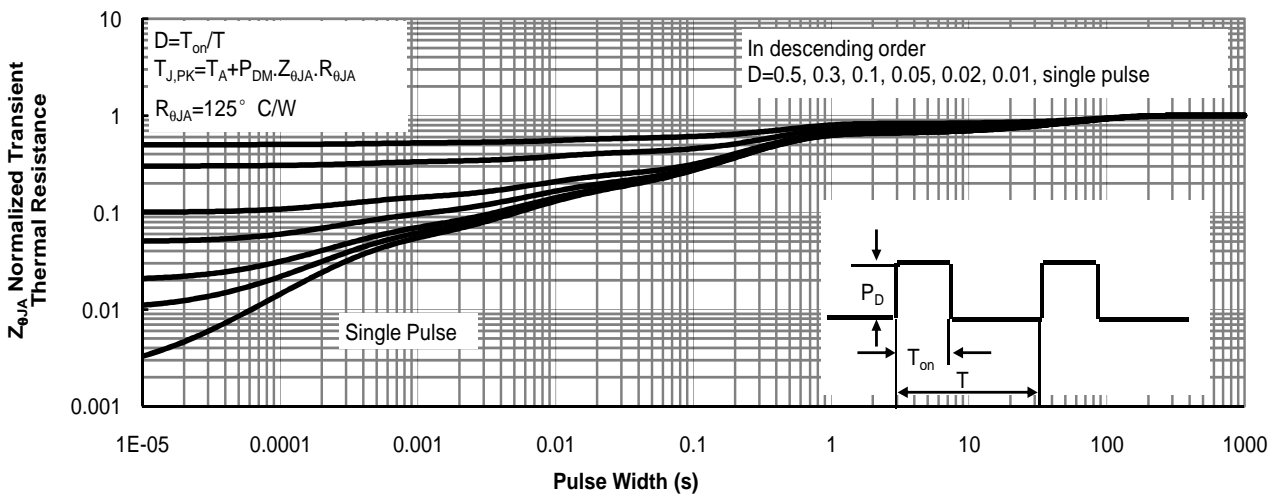
**Figure 8: Capacitance Characteristics**



**Figure 9: Maximum Forward Biased Safe Operating Area (Note F)**



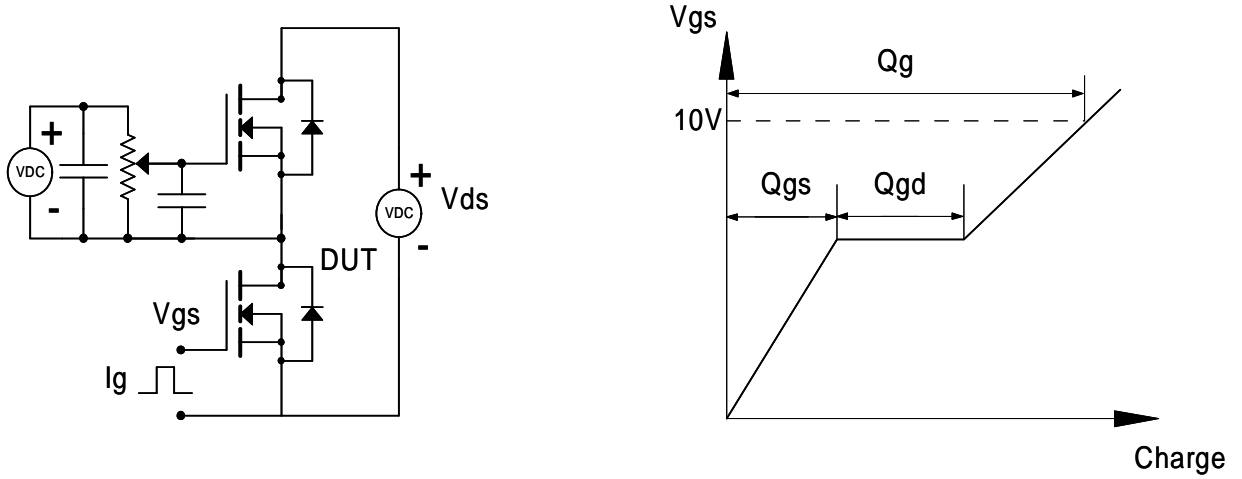
**Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)**



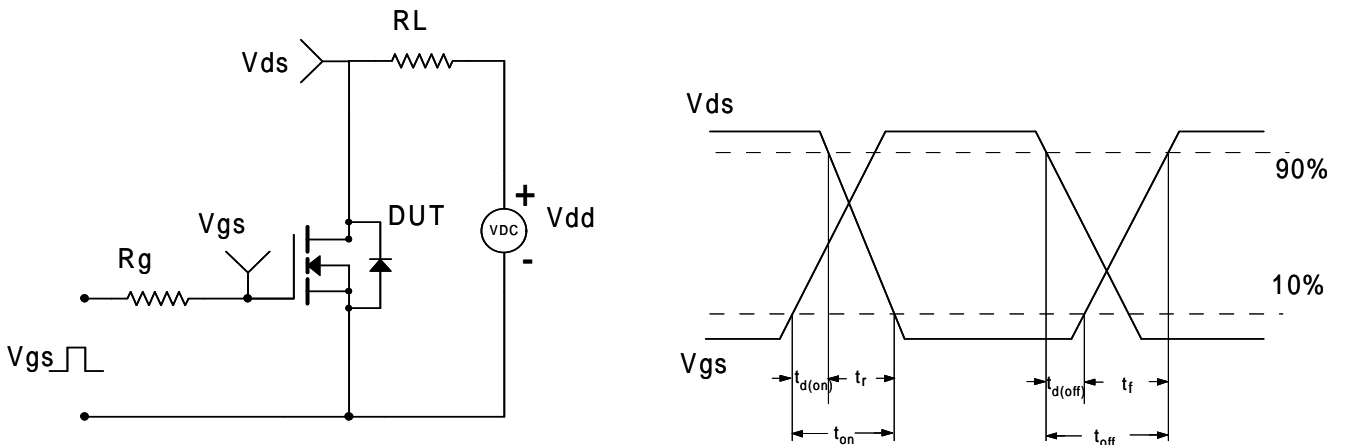
**Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)**

LOW VOLTAGE MOSFET (N-CHANNEL)

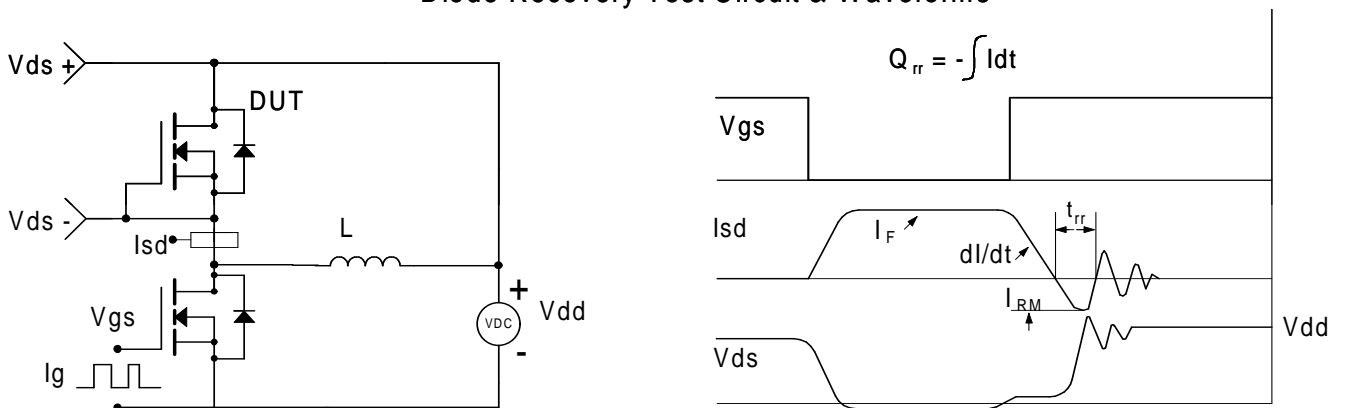
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

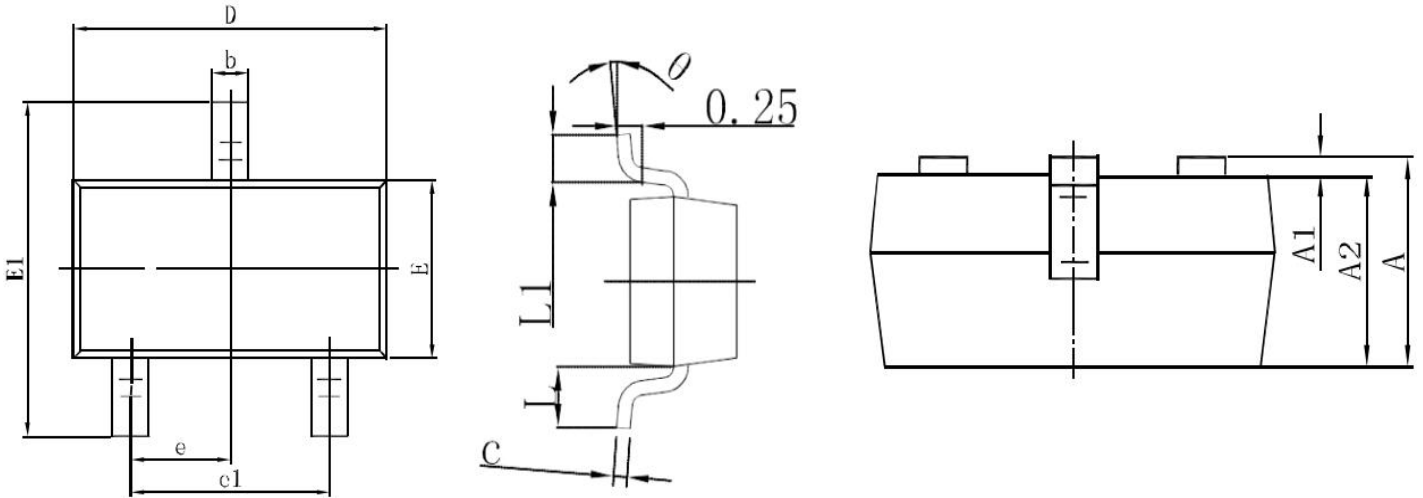


Diode Recovery Test Circuit & Waveforms



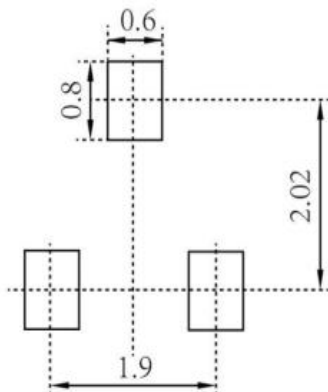
LOW VOLTAGE MOSFET (N-CHANNEL)

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.354	0.453
A1	0.000	0.100	0.000	0.039
A2	0.900	1.050	0.354	0.413
b	0.300	0.500	0.118	0.197
c	0.080	1.150	0.031	0.453
D	2.900	3.100	1.142	1.220
E	1.200	1.400	0.472	0.551
E1	2.250	2.550	0.886	1.004
e	0.95REF		0.374REF	
e1	1.800	2.000	0.709	0.787
L	0.55REF		0.215REF	
L1	0.300	0.500	0.118	0.197

SOT-23 Suggested Pad Layout



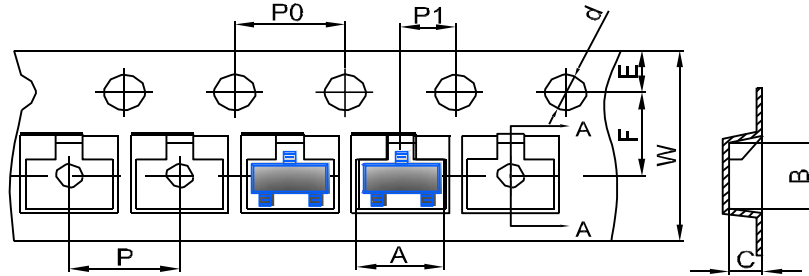
Note:

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)

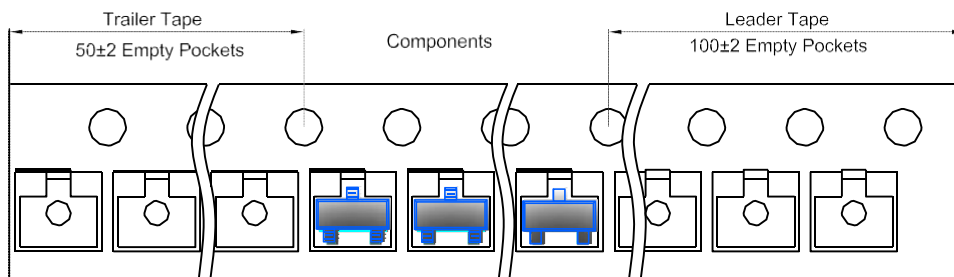
**SOT-23 Tape and Reel**

**SOT-23 Embossed Carrier Tape**

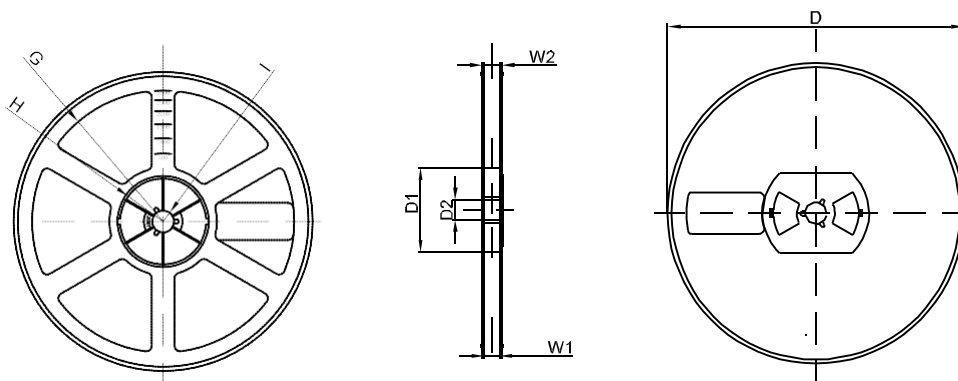


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

**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