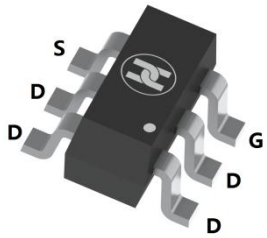
HIGH VOLTAGE MOSFET (P-CHANNEL)

FEATURES

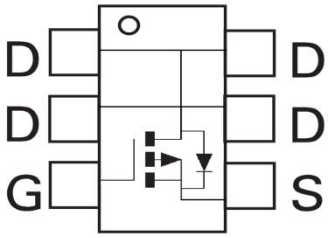
- V_{DS}=-250V,$R_{DS(ON)}$≤14Ω@V_{GS}=-10V,I_D=-197mA
- High voltage and Low on-resistance
- Fast switching speed
- Low gate drive and Low threshold
- Complementary N-channel Type ZVN4525E6
- Surface Mount device



SOT-23-6

MECHANICAL DATA

- Case: SOT-23-6
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.018 grams (approximate)



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

Parameter		Symbol	Value	Unit
Drain-source voltage		V_{DS}	-250	V
Gate-source voltage		V_{GS}	±40	V
Continuous drain current	(VGS=10V; Tamb=25°C)(a)	I_D	-197	mA
	(VGS=10V; Tamb=70°C)(a)		-157	mA
Pulsed drain current (c)		I_{DM}	-0.7	A
Continuous Source Current (Body Diode)		I_S	-0.75	A
Pulsed Source Current (Body Diode)(c)		I_{SM}	-1	A
Power dissipation(a)		P_D	1.1	W
Junction to Ambient(a)		$R_{\theta JA}$	113	°C/W
Junction to Ambient (b)			68	°C/W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 ~+150	°C

NOTES (a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions
(b) For a device surface mounted on FR4 PCB measured at t≤5 secs.
(c) Repetitive rating - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

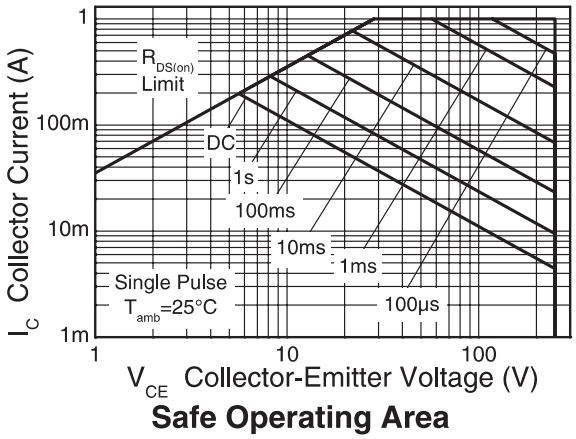
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage	$V_{(BR)DSS}$	-250	-285		V	V_{GS}=0V, I_D=-1mA
Zero gate voltage drain current	I_{DSS}		-30	-500	nA	V_{DS}=-250V, V_{GS}=0V
Gate-body leakage current	I_{GSS}		±1	±100	nA	V_{DS}=0V, V_{GS}=±40V
Gate-threshold voltage	$V_{GS(th)}$	-0.8	-1.5	-2.0	V	V_{DS}=V_{GS}, I_D=-1mA
Drain-source on-resistance (1)	$R_{DS(ON)}$		10	14	Ω	V_{GS}=-10V, I_D=-200mA
			13	18	Ω	V_{GS}=-3.5V, I_D=-100mA
Forward Trans-conductance (1) (2)	g_{fs}	80	200		mS	V_{DS}=-25V, I_D=-150mA
Input capacitance(2)	C_{iss}		73		pF	V_{DS}=-25V, V_{GS}=0V, f=1MHz
Output capacitance(2)	C_{oss}		12.8		pF	
Reverse transfer capacitance(2)	C_{rss}		3.91		pF	
Turn-on delay time(2)(3)	$t_{d(on)}$		1.53		nS	V_{DD}=-30V,I_D=-200mA R_G=50Ω, V_{GS}=-10V
Turn-on rise time(2)(3)	t_r		3.78		nS	
Turn-off delay time(2)(3)	$t_{d(off)}$		17.5		nS	
Turn-off fall time(2)(3)	t_f		7.85		nS	
Total Gate Charge(2)(3)	Q_g		2.45	3.45	nC	V_{DS}=-25V,V_{GS}=-10V,I_D=-200mA
Gate-Source Charge(2)(3)	Q_{gs}		0.22	0.31	nC	
Gate Drain Charge(2)(3)	Q_{gd}		0.45	0.63	nC	
Diode Forward Voltage (1)	V_{SD}			0.97	V	I_S=-200mA,V_{DS}=-25V,T_J=25°C
Reverse Recovery Time (3)	t_{rr}		205	290	nS	I_F=-200mA,di/dt= 100A/μs
Reverse Recovery Charge (3)	Q_{rr}		21	29	nC	

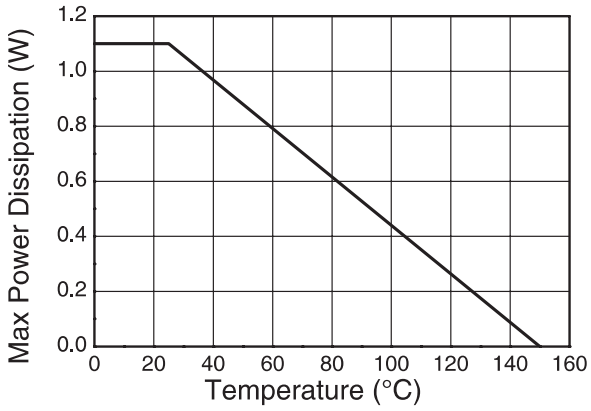
Note:(1) Measured under pulsed conditions. Width=300μs. Duty cycle ≤2%.
(2) Sample test.
(3) Switching times measured with 50Ω source impedance and <5ns rise time on a pulse generator

HIGH VOLTAGE MOSFET (P-CHANNEL)

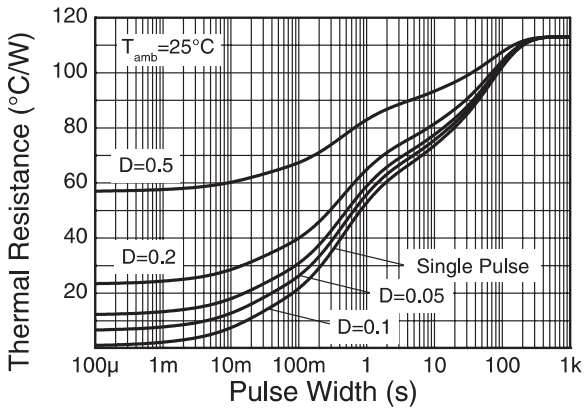
Typical Characteristics



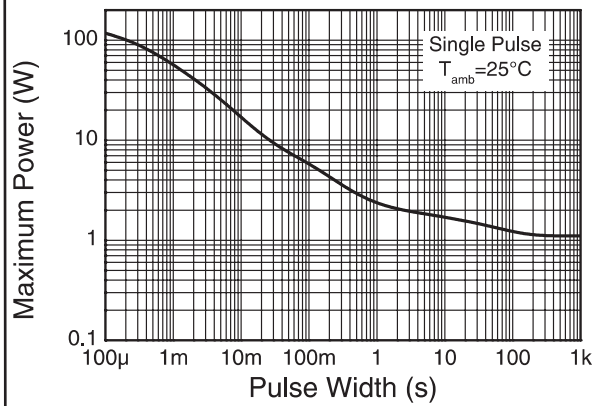
Safe Operating Area



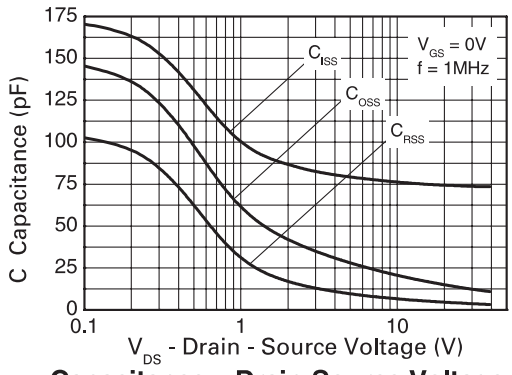
Derating Curve



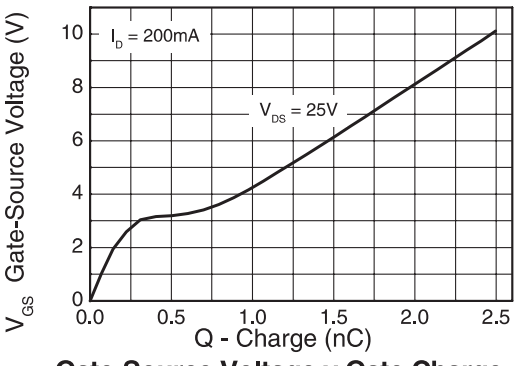
Transient Thermal Impedance



Pulse Power Dissipation

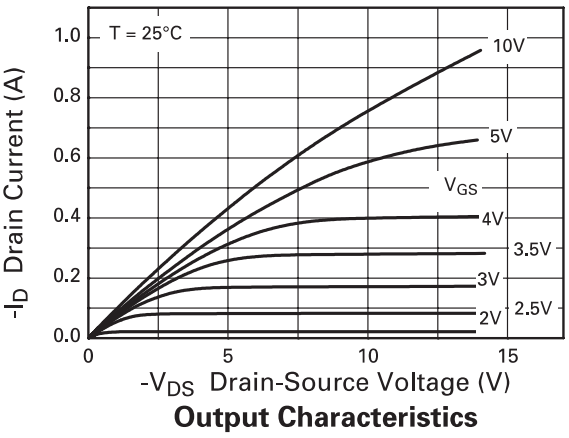


Capacitance v Drain-Source Voltage

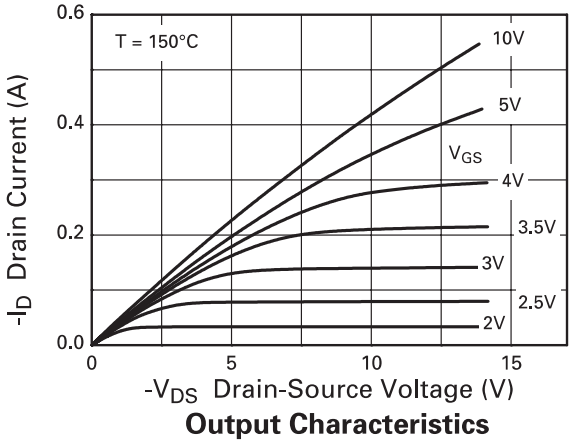


Gate-Source Voltage v Gate Charge

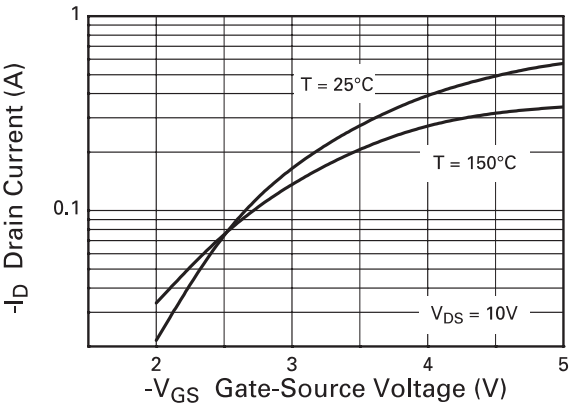
HIGH VOLTAGE MOSFET (P-CHANNEL)



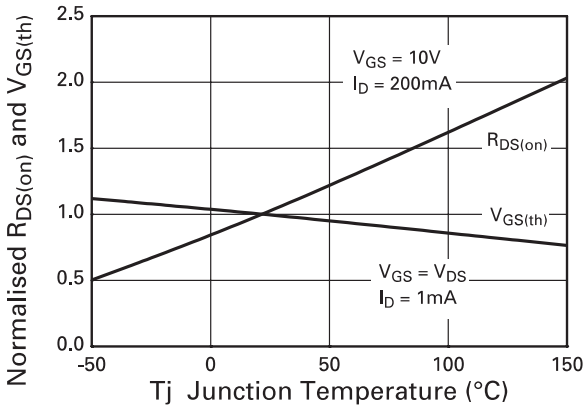
Output Characteristics



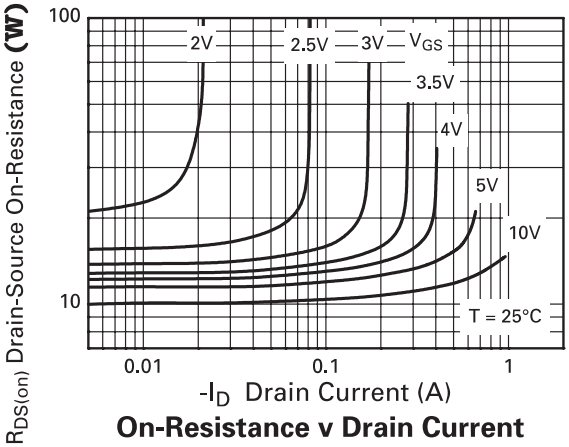
Output Characteristics



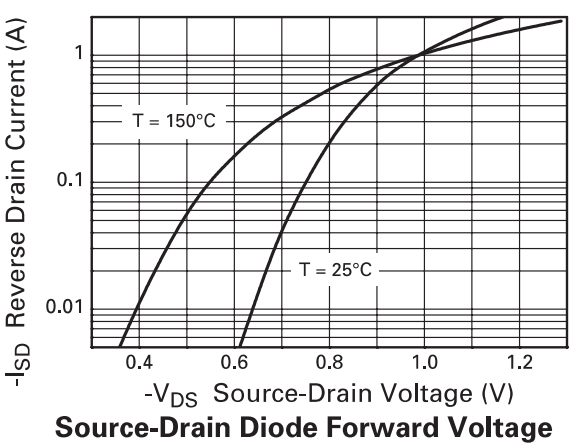
Typical Transfer Characteristics



Normalised Curves v Temperature



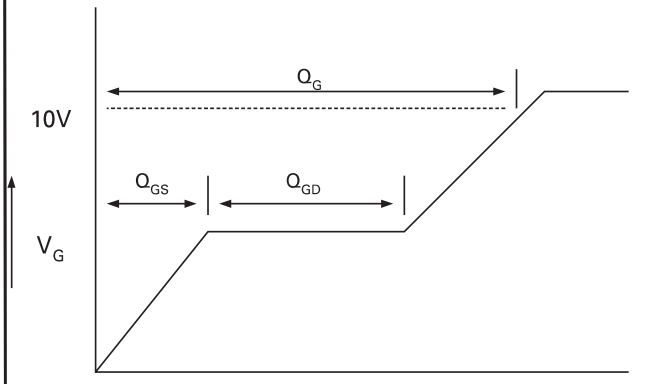
On-Resistance v Drain Current



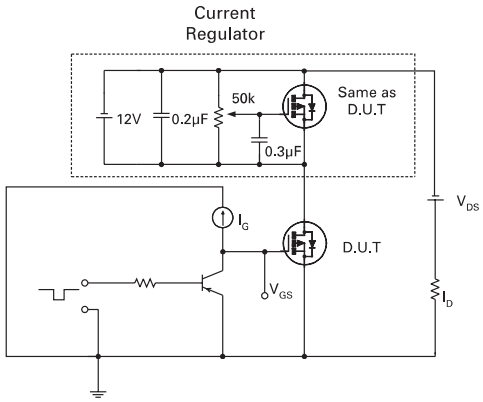
Source-Drain Diode Forward Voltage

HIGH VOLTAGE MOSFET (P-CHANNEL)

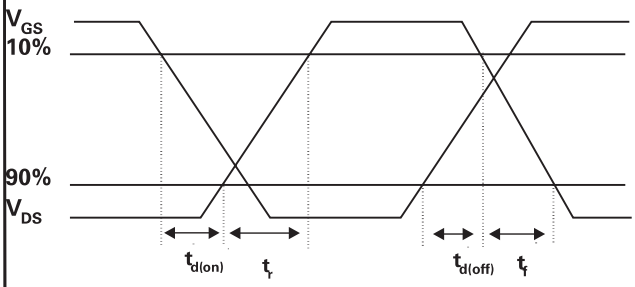
TEST CIRCUITS



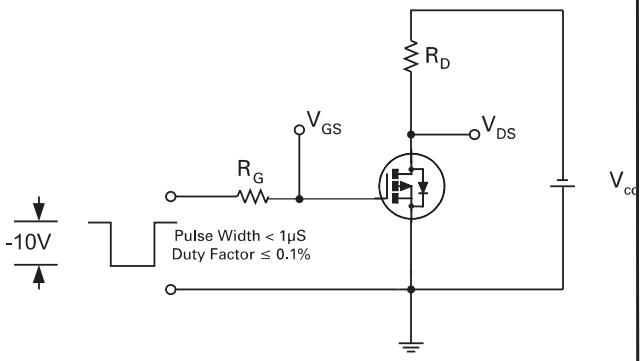
Basic Gate Charge Waveform



Gate Charge Test Circuit



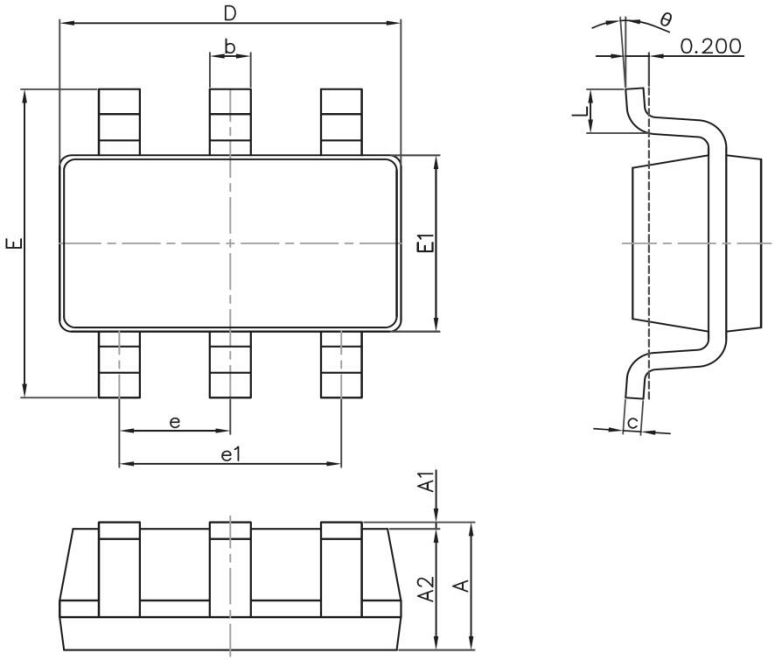
Switching Time Waveforms



Switching Time Test Circuit

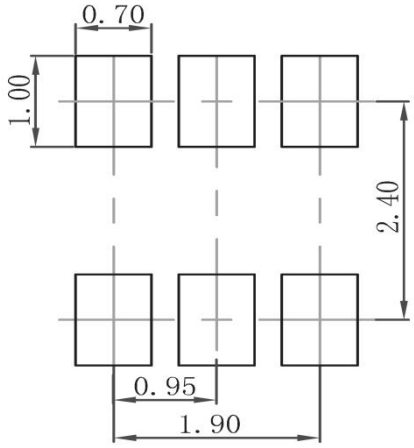
HIGH VOLTAGE MOSFET (P-CHANNEL)

SOT-23-6 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.45	0.035	0.057
A1	0.00	0.15	0.000	0.006
A2	0.90	1.30	0.035	0.051
b	0.35	0.50	0.014	0.019
c	0.09	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	2.60	3.00	0.102	0.118
E1	1.50	1.75	0.059	0.069
L	0.10	0.60	0.004	0.024
e	0.95 REF		0.037 REF	
e1	1.90 REF		0.075 REF	
θ	0°	10°	0°	10°

SOT-23-6 Suggested Pad Layout



Note:

1.Controlling dimension: in millimeters

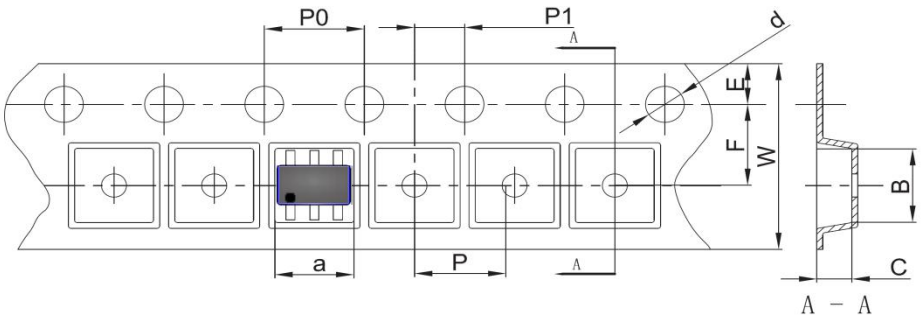
2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only

HIGH VOLTAGE MOSFET (P-CHANNEL)

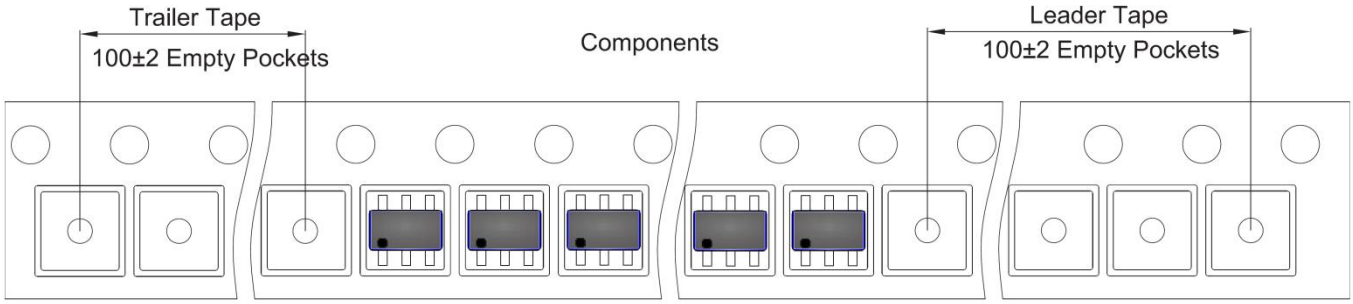
SOT-23-6 Tape and Reel

SOT-23-6 Embossed Carrier Tape

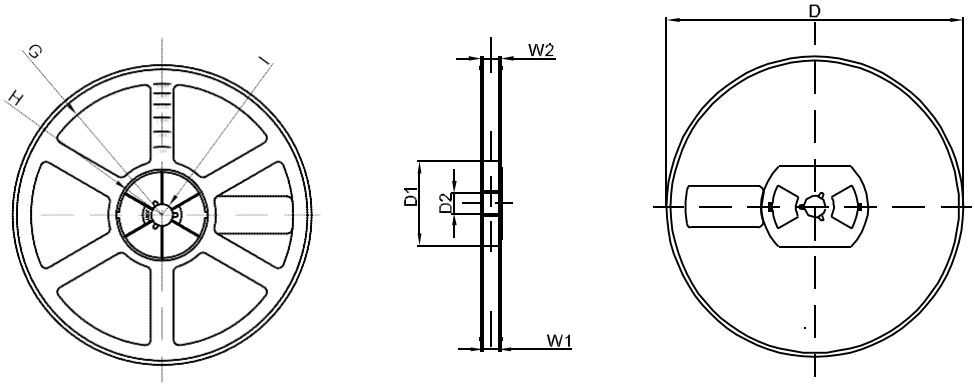


	DIMENSIONS ARE IN MILLIMETER									
TYPE	a	B	C	d	E	F	P0	P	P1	W
SOT-23-6	3.17	3.23	1.37	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-23-6 Tape Leader and Trailer



SOT-23-6 Reel



	DIMENSIONS ARE IN MILLIMETER							
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø180	60.00	13.00	R78	R25.60	R6.50	9.50	13.10
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1