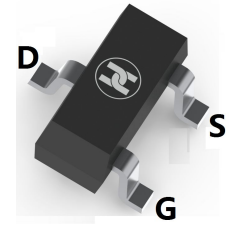
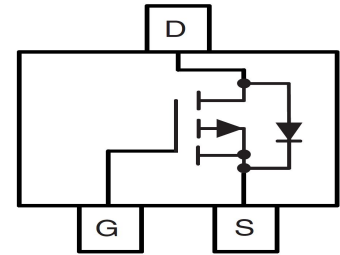


MOSFET (P-CHANNEL)
FEATURES

- $V_{DS}=-30V$, $I_D=-3.18A$, $R_{DS(ON)}<59m\Omega@V_{GS}=-4.5V$
- 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: X2CMY

MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-30	V
Gate-source voltage	V_{GS}	± 12	V
Continuous drain current	I_D	$T_A=25^\circ C$	-3.18
		$T_A=70^\circ C$	-2.1
Pulsed drain current (Note 1)	I_{DM}	-12	A
Power dissipation	P_D	$T_A=25^\circ C$	0.89
		$T_A=70^\circ C$	0.54
Linear Derating Factor		0.01	W/ $^\circ C$
Thermal resistance from Junction to ambient	$R_{\theta JA}^*$	140	$C \text{ } ^\circ W$
Storage and Junction temperature	T_J, T_{STG}	-55 ~ +150	$^\circ C$

*Surface mounted on 1 in square Cu board

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage	$V_{(BR)DSS}$	-30			V	$V_{GS}=0V, I_D=-250\mu A$
Zero gate voltage drain current	I_{DSS}			-1	μA	$V_{DS}=-30V, V_{GS}=0V$
Gate-body leakage current	I_{GSS}			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 12V$
Gate-threshold voltage (note 1)	$V_{GS(th)}$	-0.5	-0.97	-1.5	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
Drain-source on-resistance(note 1)	$R_{DS(ON)}$		47	59	Ωm	$V_{GS}=-4.5V, I_D=-1A$
			60	79	Ωm	$V_{GS}=-2.5V, I_D=-1A$
Internal Gate Resistance	R_G		16		Ω	
Forward transconductance(note 1)	g_{FS}		3.4		S	$V_{DS}=-10V, I_D=-3.18A$
Input capacitance	C_{iss}		570		pF	$V_{DS}=-16V, V_{GS}=0V, f=1MHz$
Output capacitance	C_{oss}		160		pF	
Reverse transfer capacitance	C_{rss}		110		pF	
Turn-on delay time	$t_{d(on)}$		7		nS	$V_{DD}=-10V, I_D=-1A, R_G=6.8\Omega, V_{GS}=-4.5V$
Turn-on rise time	t_r		12		nS	
Turn-off delay time	$t_{d(off)}$		34		nS	
Turn-off fall time	t_f		25		nS	
Total gate charge	Q_g		6.9		nC	
Gate-source charge	Q_{gs}		1.2		nC	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=3.18A$
Gate-drain charge	Q_{gd}		2.9		nC	
Diode forward current(Body Diode)	I_S			-1.3	A	
Pulsed Source Current(Body Diode)	I_{SM}			-18	A	
Diode forward voltage (note 1)	V_{SD}			-1.5	V	$s=1A, V_{GS}=0V, T_J=25^\circ C$
Reverse Recovery Time	t_{rr}		21	32	nS	$T_J=25^\circ C, V_R=-15V, I_F=3.18A$
Reverse Recovery Charge	Q_{rr}		6.2	9.3	nC	$di/dt=100A/\mu s$

Note:1. Pulse test ; Pulse width $\leq 400\mu s$, Duty cycle $\leq 2\%$.

MOSFET (P-CHANNEL)

Typical Characteristics

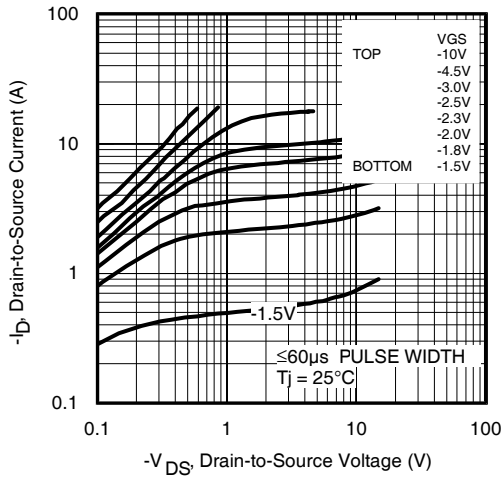


Fig 1. Typical Output Characteristics

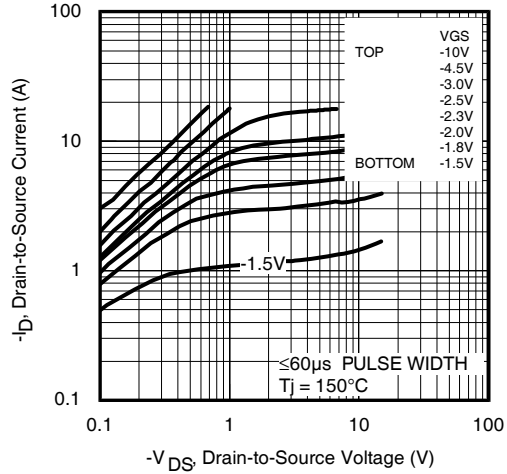


Fig 2. Typical Output Characteristics

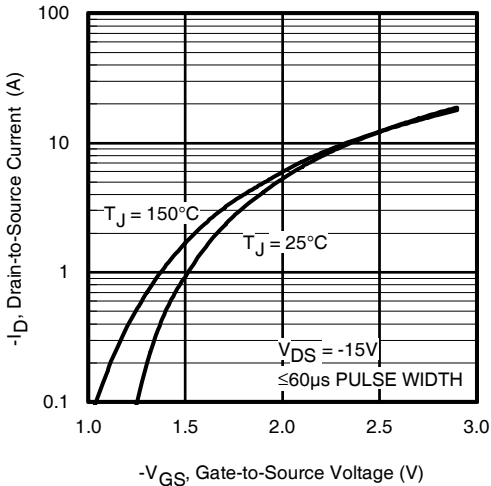


Fig 3. Typical Transfer Characteristics

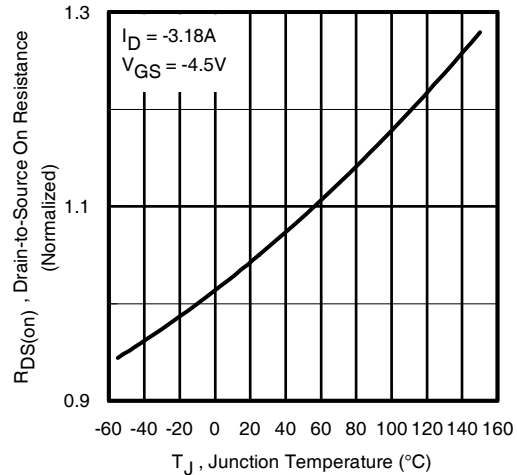


Fig 4. Normalized On-Resistance Vs. Temperature

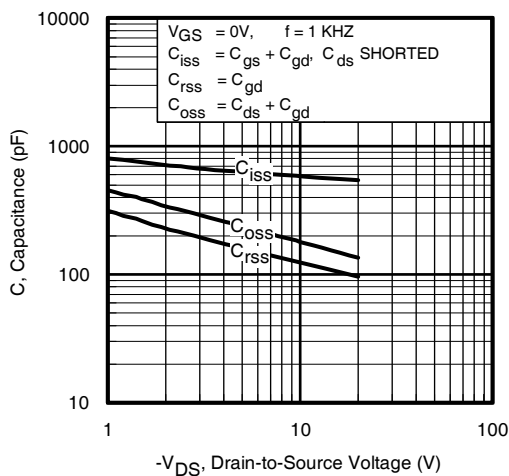


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

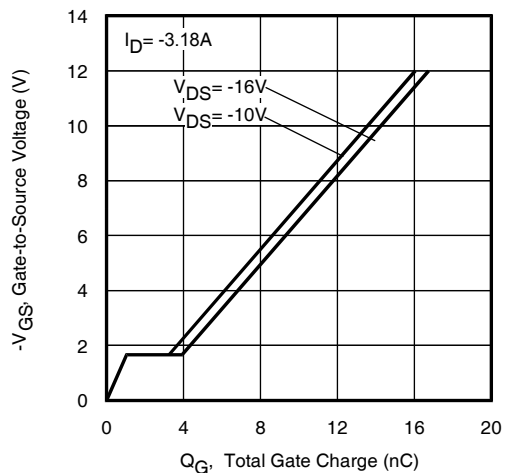


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

MOSFET (P-CHANNEL)

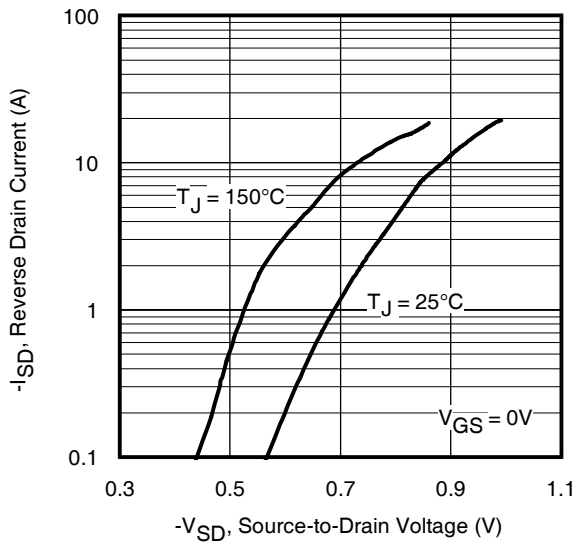


Fig 7. Typical Source-Drain Diode Forward Voltage

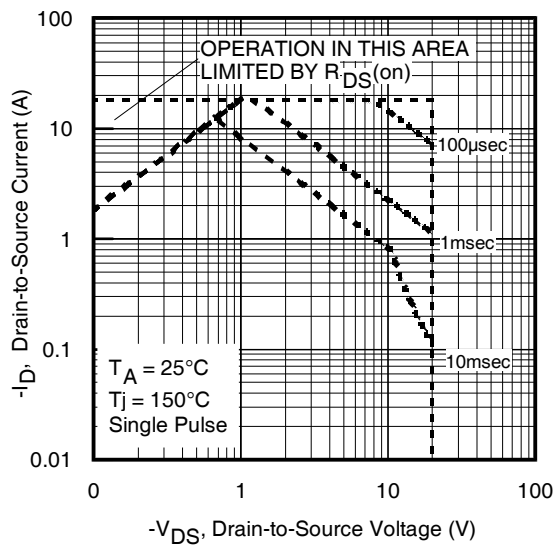


Fig 8. Maximum Safe Operating Area

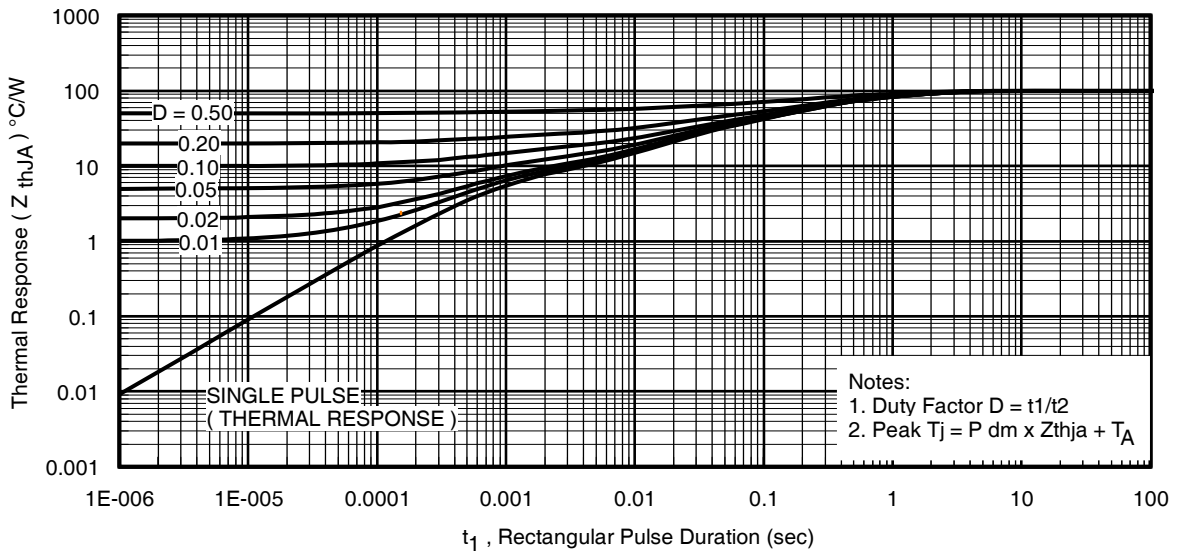


Fig 9. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

MOSFET (P-CHANNEL)

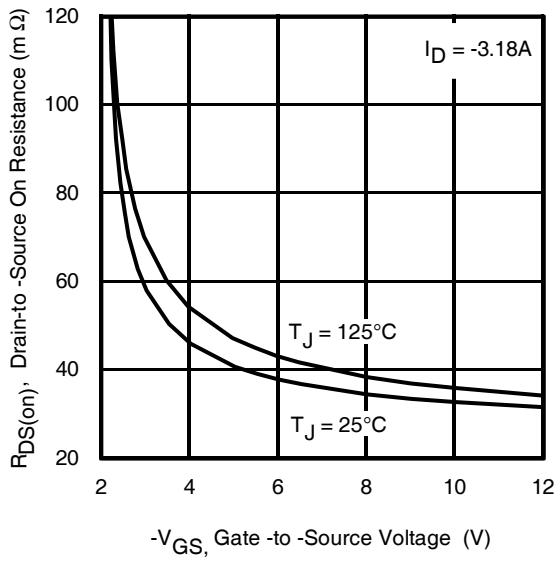


Fig 10. Typical On-Resistance Vs. Gate Voltage

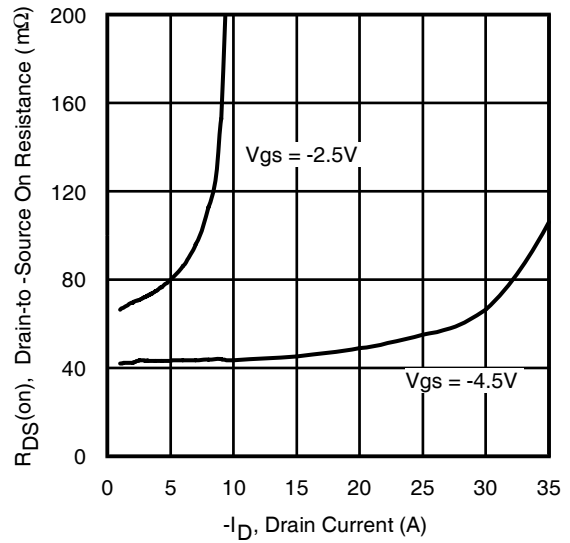


Fig 11. Typical On-Resistance Vs. Drain Current

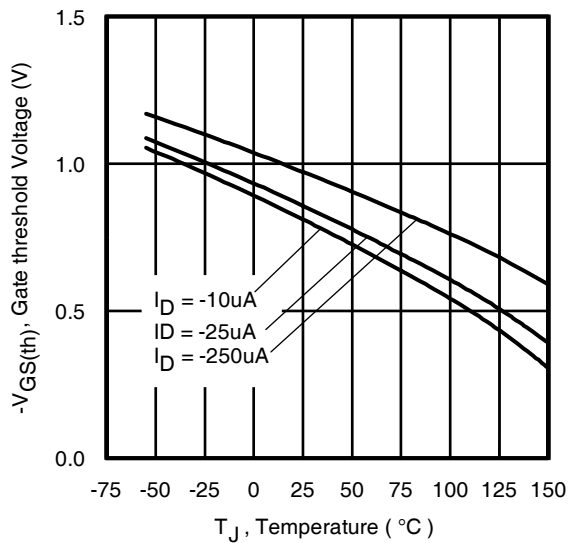


Fig 12. Typical Threshold Voltage Vs. Junction Temperature

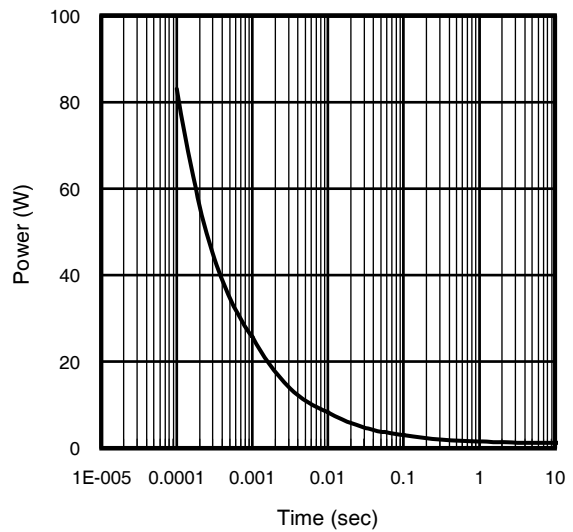
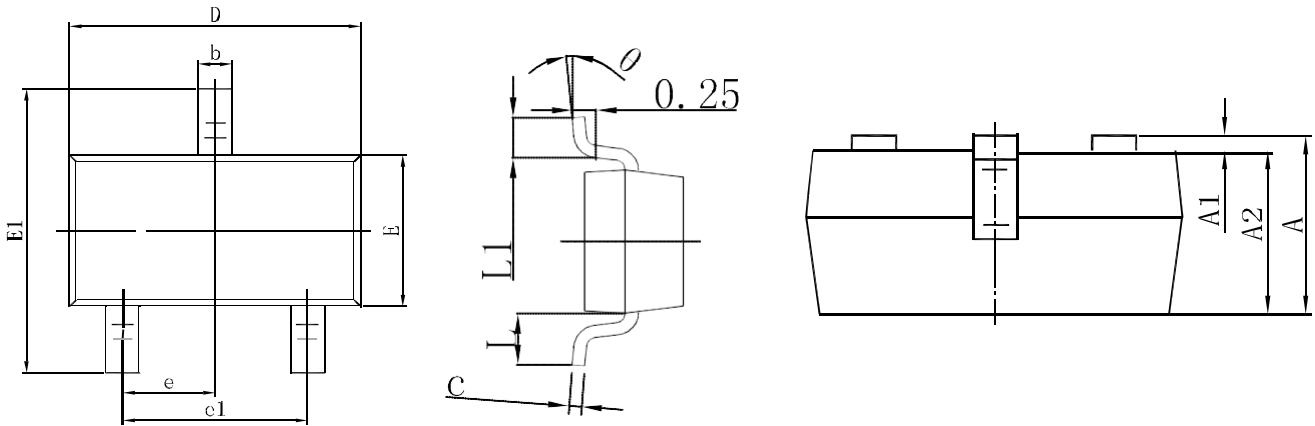
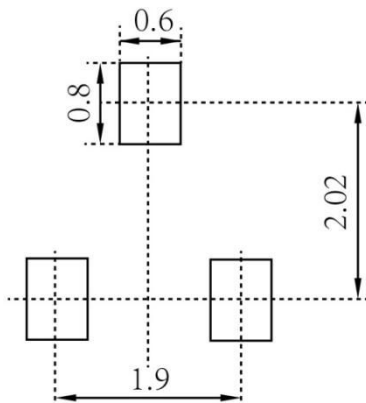


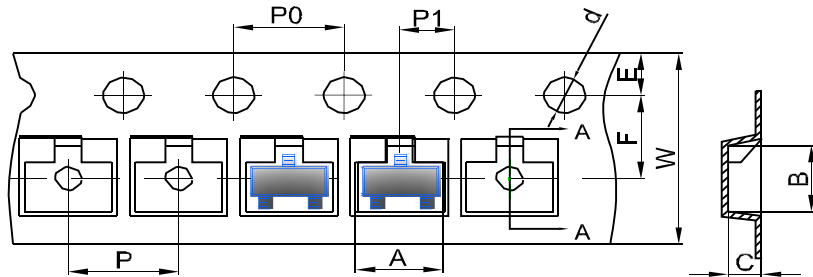
Fig 13. Typical Power Vs. Time

MOSFET (P-CHANNEL)
SOT-23 Package Outline Dimensions


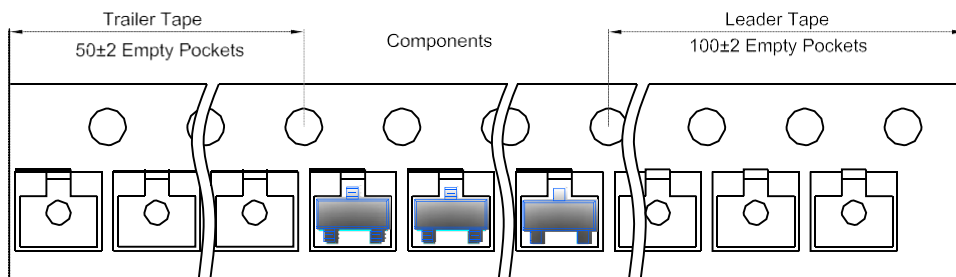
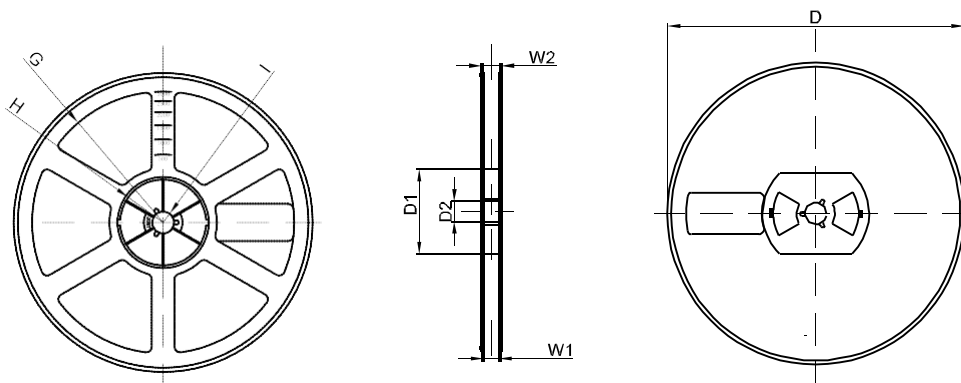
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		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: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

MOSFET (P-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