JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

SOT-23-6L Plastic-Encapsulate MOSFETS

CJL2311 P-channel and N-channel Complementary MOSFETS

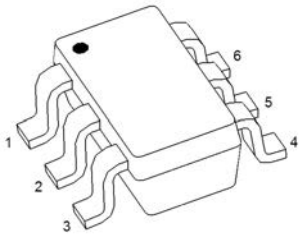
P-channel

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
-20V	90mΩ@-4.5V	-2.3A
	125mΩ@-2.5V	
	350mΩ@-1.8V	

N-channel

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
20V	30mΩ@4.5V	4A
	35mΩ@2.5V	

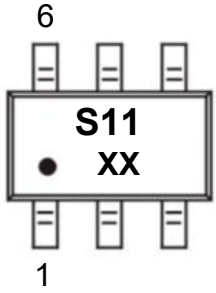
SOT-23-6L



GENERAL DESCRIPTION

The CJL2311 uses advanced trench technology to provide excellent $R_{DS(on)}$ and low gate charge. The complementary MOSFETS form a high-speed power inverter and suitable for a multitude of applications.

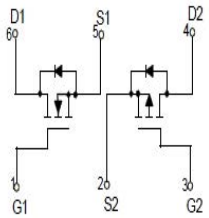
MARKING



S11=Device code
Solid point=Pin1 positioning point

XX=Date Code

Equivalent Circuit



Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value		Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DS}	20	-20	V
Gate-Source Voltage	V_{GS}	±12	±8	V
Continuous Drain Current	I_D	4	-2.3	A
Pulsed Drain Current (note 1)	I_{DM}	12	-10	A
Power Dissipation(note 2)	P_D	1.1		W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	114		℃/W
Operation Junction and Storage Temperature Range	T_J,T_{stg}	-55~+150		℃

MOSFET ELECTRICAL CHARACTERISTICS

N-channel MOSFET Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =20V,V_{GS} = 0V,T_J=25℃			1	μA
		V_{DS} =20V,V_{GS} = 0V,T_J=125℃			1	mA
Gate-source leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
On characteristics (note3)						
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =4.5V, I_D =3.4A		22	30	mΩ
		V_{GS} =2.5V, I_D =3A		30	35	mΩ
Forward tranconductance	g_{FS}	V_{DS} =10V, I_D =3.4A	4.5			S
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.4	0.59	1	V
Dynamic characteristics (note4)						
Input capacitance	C_{iss}	V_{GS} =0V,V_{DS} =10V,f =1MHz		480	500	pF
Output capacitance	C_{oss}			90	110	pF
Reverse transfer capacitance	C_{rss}			80	100	pF
Gate resistance	R_g	V_{DS} =0V,V_{GS} =0V,f =1MHz		21	30	Ω
Switching Characteristics (note4)						
Turn-on delay time	$t_{d(on)}$	VDD=10V,VG=4.5V,ID=1A RL=10Ω,RG=1Ω		12		ns
Turn-on rise time	t_r			80		ns
Turn-off delay time	$t_{d(off)}$			26		ns
Turn-off fall time	t_f			13		ns
Total Gate Charge	Q_g	VDS=10V,VGS=4.5V,ID=3.4A		6.2		nC
Gate-Source Charge	Q_{gs}			0.5		nC
Gate-Drain Charge	Q_{gd}			1.7		nC
Drain-source diode characteristics and maxium ratings						
Diode forward voltage (note3)	V_{DS}	I_S=2.7A,V_{GS}=0V			1.2	V
Continuous drain-source diode forward current	I_S				4	A
Pulsed drain-source diode forward current(note 1)	I_{SM}				12	A

MOSFET ELECTRICAL CHARACTERISTICS

P-channel MOSFET Electrical Characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =-250μA	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-20V,V_{GS} = 0V,T_J=25℃			-1	μA
		V_{DS} =-20V,V_{GS} = 0V,T_J=125℃			-1	mA
Gate-source leakage current	I_{GSS}	V_{GS} =±8V, V_{DS} = 0V			±100	nA
On characteristics (note3)						
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-2.5A		75	90	mΩ
		V_{GS} =-2.5V, I_D =-2A		100	125	mΩ
		V_{GS} =-1.8V, I_D =-1.6A		250	350	mΩ
Forward tranconductance	g_{FS}	V_{DS} =-5V, I_D =-2.8A	4			S
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.4	-0.8	-1	V
Dynamic characteristics (note4)						
Input capacitance	C_{iss}	V_{GS} =0V,V_{DS} =-10V,f =1MHz		363	400	pF
Output capacitance	C_{oss}			70	85	pF
Reverse transfer capacitance	C_{rss}			60	75	pF
Gate resistance	R_g	V_{DS} =0V,V_{GS} =0V,f =1MHz				Ω
Switching Characteristics (note4)						
Turn-on delay time	$t_{d(on)}$	VDD=-10V,VGEN=-4.5V,ID=-1A RL=10Ω,RGEN=1Ω		9		ns
Turn-on rise time	t_r			33		ns
Turn-off delay time	$t_{d(off)}$			29		ns
Turn-off fall time	t_f			9		ns
Total Gate Charge	Q_g	VDS=-10V,VGS=-2.5V,ID=-3A		5.5	10	nC
Gate-Source Charge	Q_{gs}			0.7		nC
Gate-Drain Charge	Q_{gd}			1.3		nC
Drain-source diode characteristics and maxium ratings						
Diode forward voltage (note3)	V_{DS}	I_S=-0.7A,V_{GS}=0V			-1.2	V
Continuous drain-source diode forward current	I_S				-2.3	A
Pulsed drain-source diode forward current(note 1)	I_{SM}				-10	A

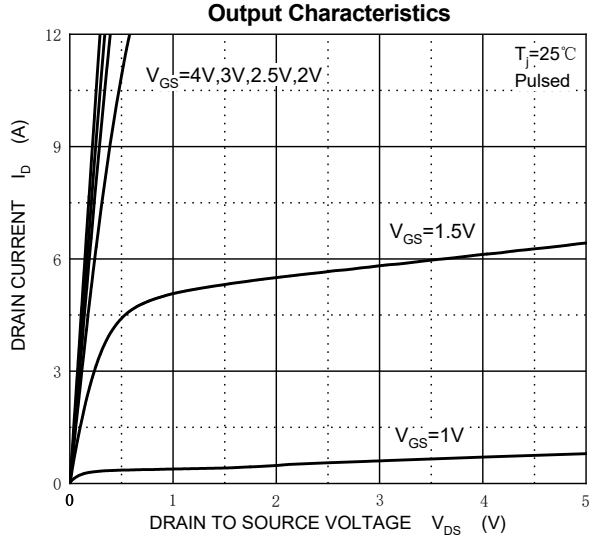
Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

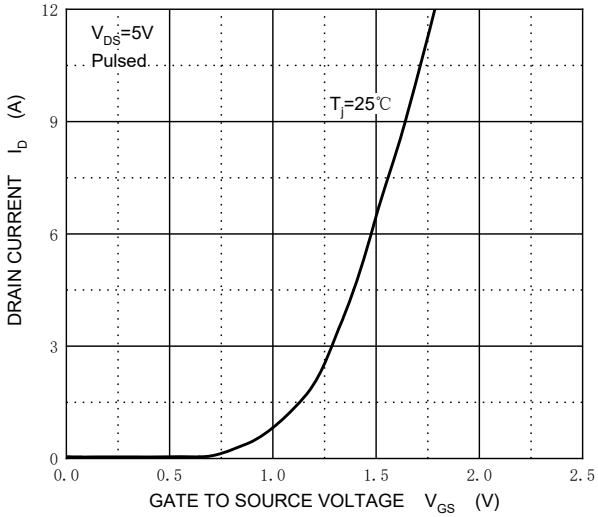
Typical Characteristics

N-Channel-MOS

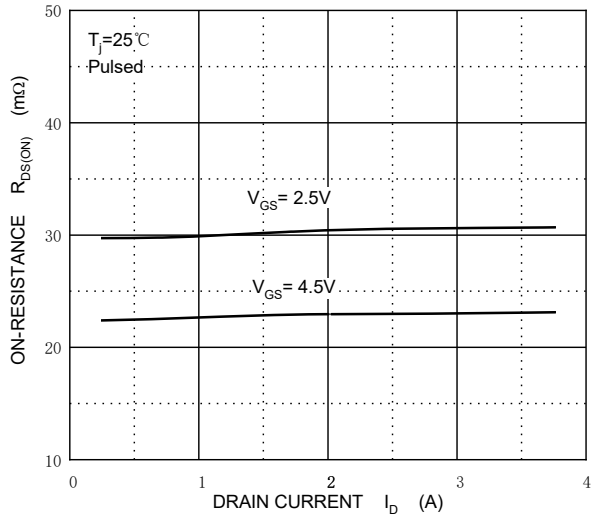
Output Characteristics



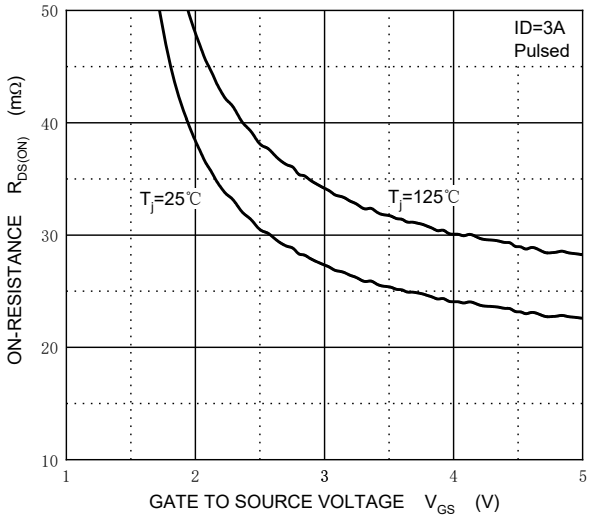
Transfer Characteristics



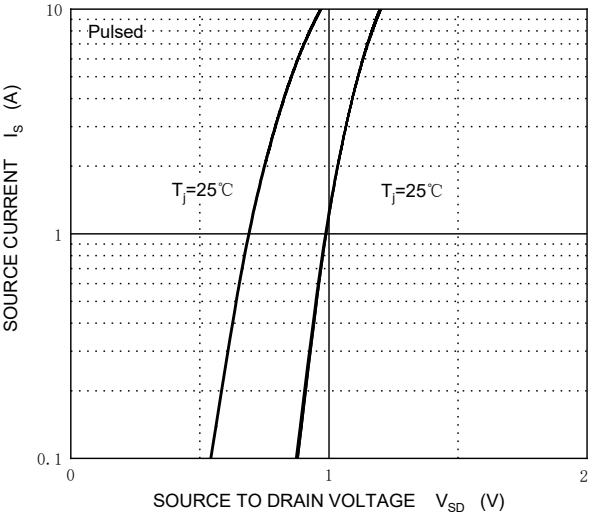
$R_{DS(ON)}$—— I_D



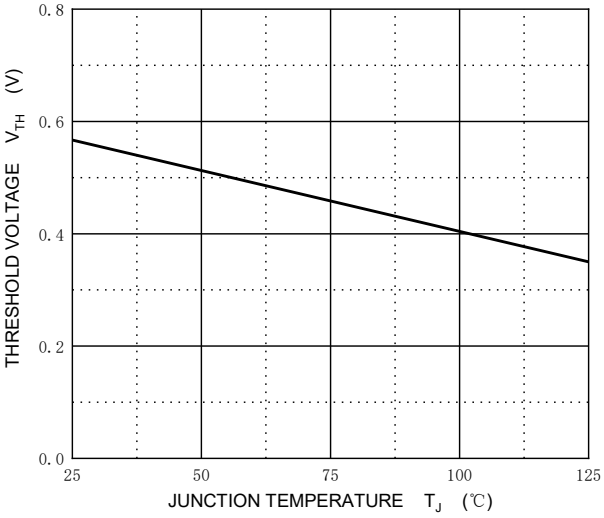
$R_{DS(ON)}$—— V_{GS}



I_S —— V_{SD}



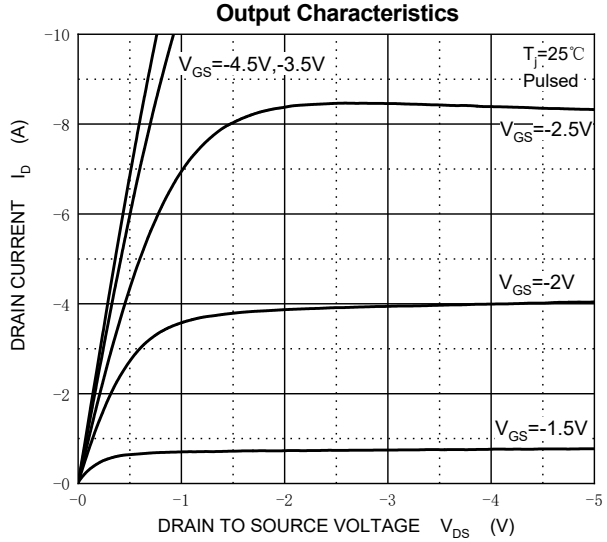
Threshold Voltage



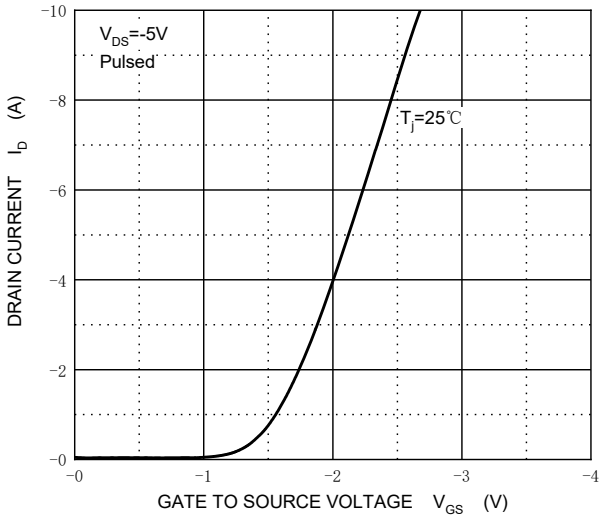
Typical Characteristics

P-Channel-MOS

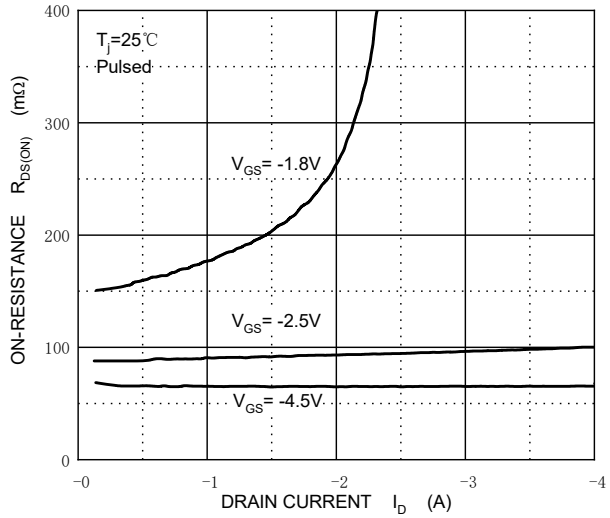
Output Characteristics



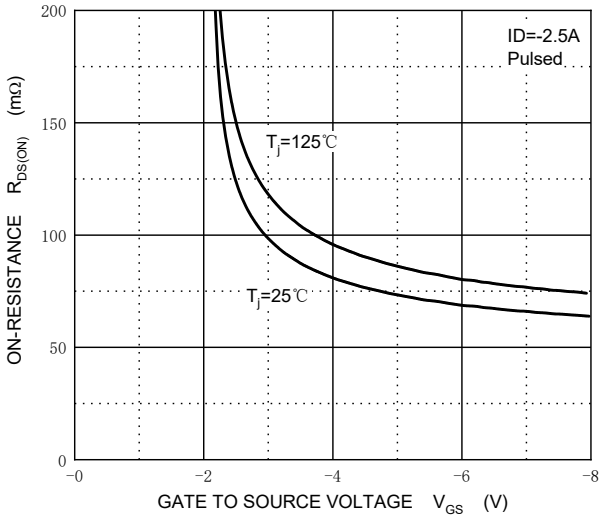
Transfer Characteristics



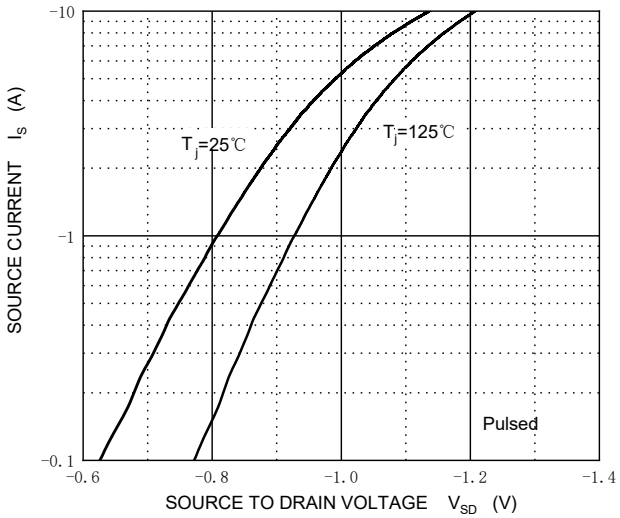
$R_{DS(ON)}$—— I_D



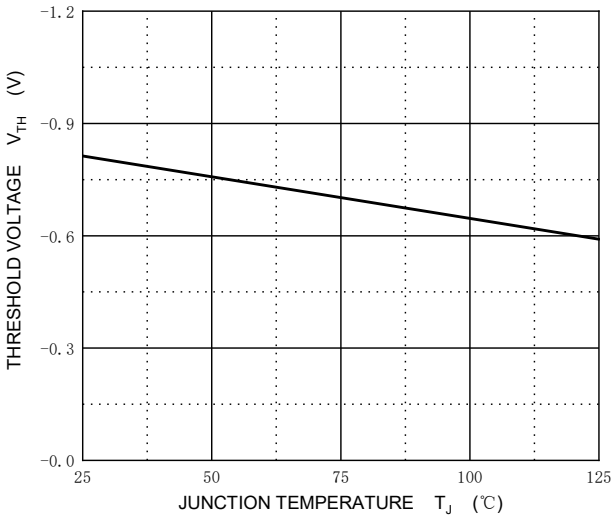
$R_{DS(ON)}$—— V_{GS}



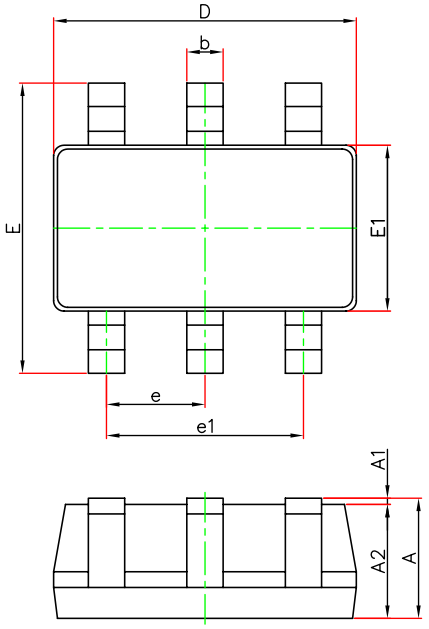
I_S —— V_{SD}

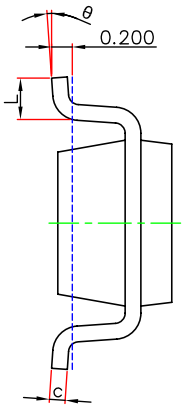


Threshold Voltage



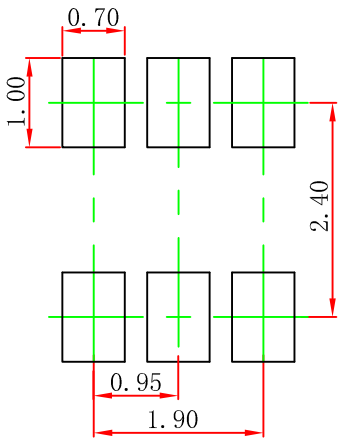
SOT-23-6L Package Outline Dimensions





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

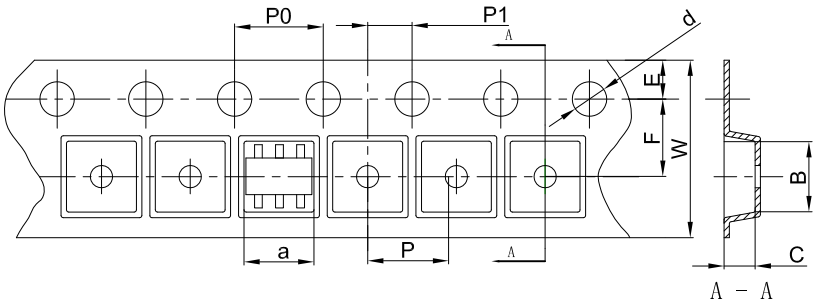
SOT-23-6L Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

SOT-23-6L Tape and Reel

SOT-23-6L Embossed Carrier Tape

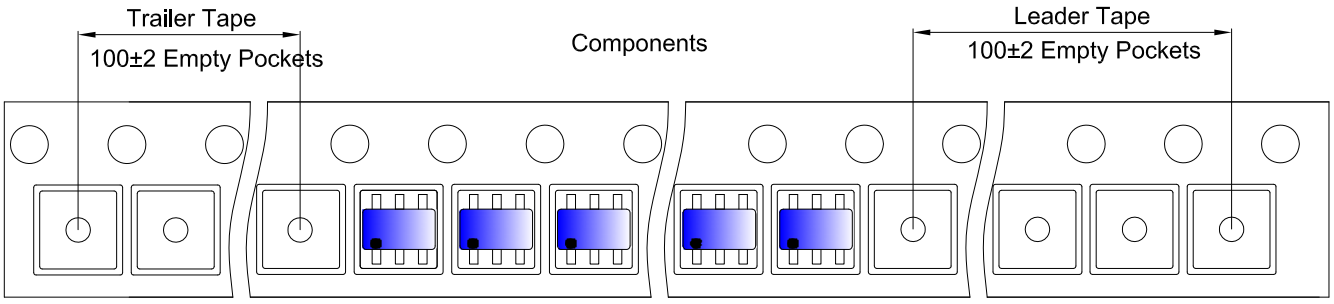


Packaging Description:

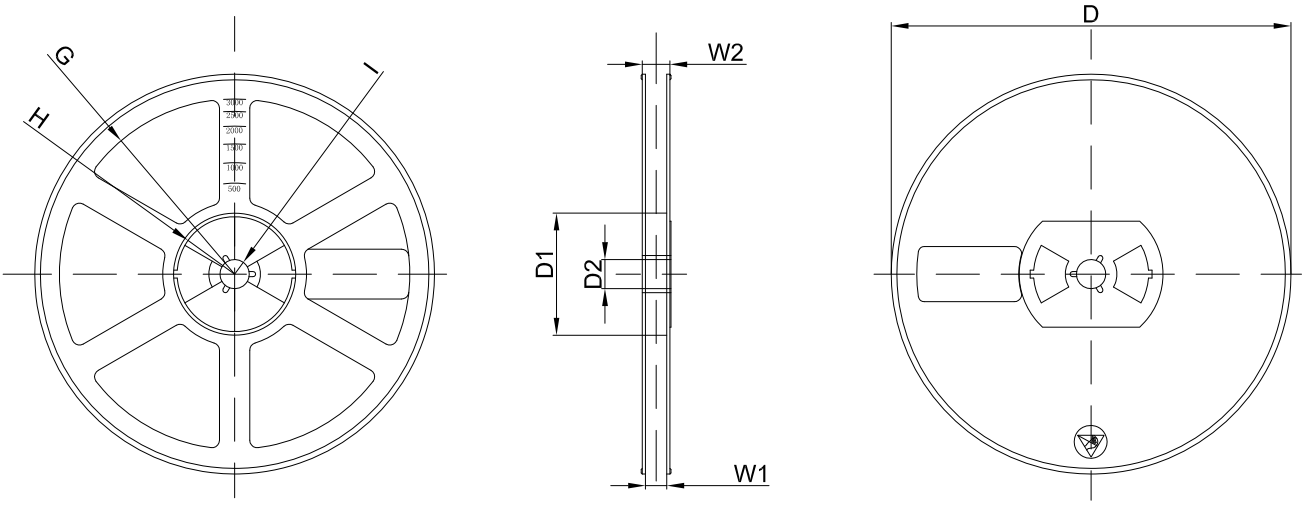
SOT-23-6L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 18.0cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOT-23-6L	3.23	3.17	1.37	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23-6L Tape Leader and Trailer



SOT-23-6L Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø180.00	60.00	13.00	R78.00	R25.60	R6.50	9.50	13.10

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	