SOT-323 Plastic-Encapsulate MOSFET

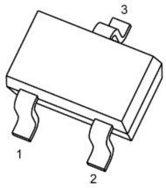
CJ3134KWA N-Channel MOSFET

Key Performance Parameters

$V_{BR(DSS)}$	$R_{DS(on)}$TYP	I_D
20V	**111mΩ@4.5V**	**1.38A**
	133mΩ@2.5V	
	166mΩ@1.8V	

SOT-323

1. GATE
2. SOURCE
3. DRAIN



DESCRIPTION

This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance.

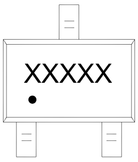
FEATURES

- Battery switch
- Load switch
- High density cell design for ultra low $R_{DS(ON)}$

APPLICATIONS

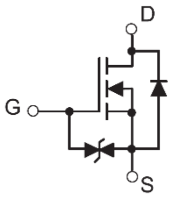
- SMPS and general purpose applications
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

MARKING



XXXXX = 34KWA
Solid dot = Green molding compound device

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	T_A =25℃	I_D⑤	1.38	A
	T_A =75℃		1.06	
Pulsed Drain Current		I_{DM}①②	5.52	A
Power Dissipation		P_D①⑤	0.42	W
Operating Junction and Storage Temperature Range		T_J,T_{stg}	-55~+150	℃

Thermal Characteristics

Parameter		Symbol	Value		Unit
			Typ	Max	
Thermal Resistance from Junction to Ambient	t≤10s	$R_{\theta JA}$⑤	238	298	℃/W
	Steady State		277	346	℃/W

Typical Characteristics

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Static Characteristics

Parameter	Symbol	Test Condition		Value			Unit
				Min	Typ	Max	
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℃	-	-	1.0	μA
			T_J =125℃	-	-	100	
Gate-body leakage current	I_{GSS}	V_{GS} =±10V,V_{DS} =0V		-	-	±20	μA
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA		0.4	0.7	1.1	V
Static drain-source on-sate resistance	$R_{DS(on)}$③	V_{GS} =4.5V,I_D =0.65A	T_J =25℃	-	111	150	mΩ
			T_J =125℃	-	150	203	
		V_{GS} =2.5V, I_D =0.55A		-	133	190	
		V_{GS} =1.8V, I_D =0.45A		-	166	270	
Forward tranconductance	g_{FS}	V_{DS} =10V,I_D =0.8A		-	1.55	-	S

Dynamic Characteristics④

Input capacitance	C_{iss}	V_{GS}=0V,V_{DS}=16V, f =1MHz	-	52	-	pF
Output capacitance	C_{oss}		-	19	-	
Reverse transfer capacitance	C_{rss}		-	10	-	
Total gate charge	Q_g	V_{GS} =2.5V,V_{DS} =10V,I_D =1A	-	0.532	-	nC
Total gate charge	Q_g	V_{GS}=4.5V,V_{DS}=10V, I_D=1A	-	0.83	-	
Gate charge at threshold	$Q_{G(th)}$		-	0.085	-	
Gate-source charge	Q_{gs}		-	0.17	-	
Gate-drain charge	Q_{gd}		-	0.14	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V,V_{GS}=4.5V, I_D=0.5A, R_g=10Ω	-	6.6	-	ns
Turn-on rise time	t_r		-	15.2	-	
Turn-off delay time	$t_{d(off)}$		-	103	-	
Turn-off fall time	t_f		-	59	-	

Reverse Diode Characteristics

Drain-source diode forward voltage	V_{SD}③	V_{GS} =0V, I_S=0.15A	-	-	1.2	V
Continuous drain-source diode forward current	I_S①		-	-	1.38	A
Pulsed drain-source diode forward current	I_{SM}①②		-	-	5.52	A

Notes:

①.Limited only by maximum temperature allowed.

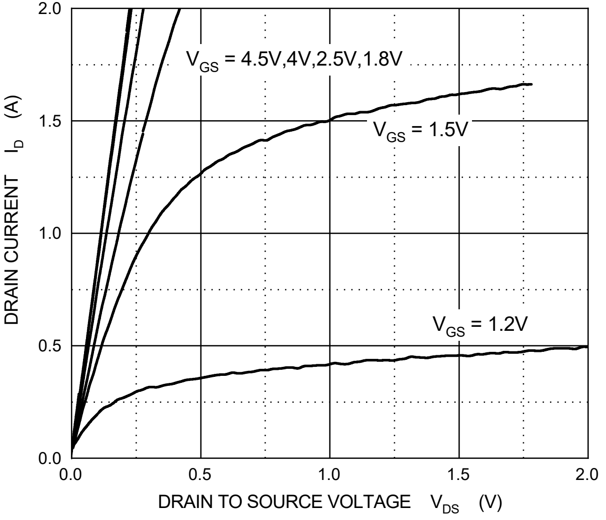
②.P_W≤10μs, Duty cycle≤1%.

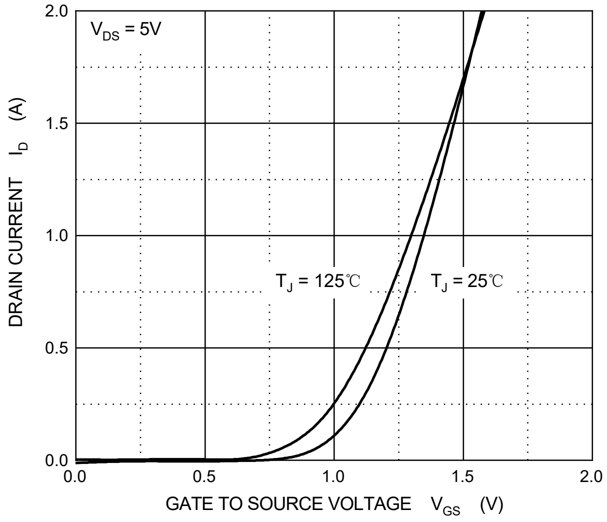
③.Pulse Test : Pulse Width≤380μs, duty cycle ≤2%.

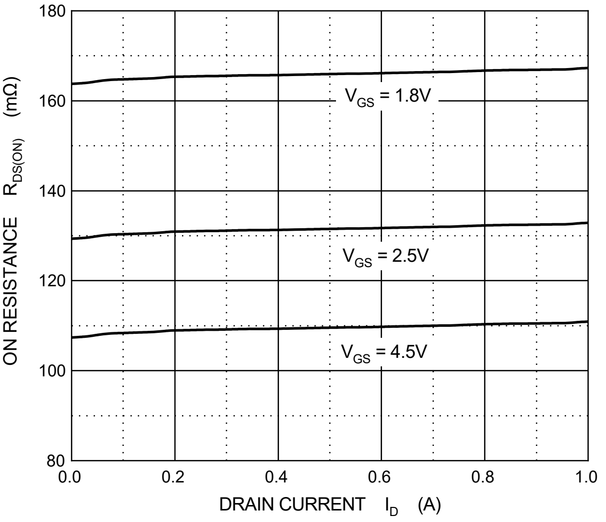
④.Guaranteed by design, not subject to production.

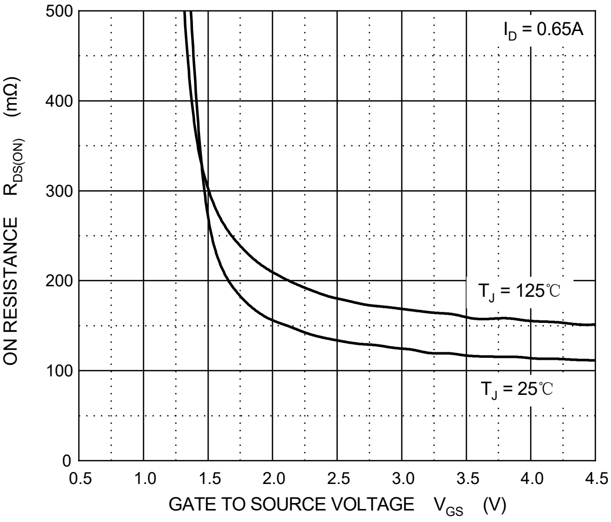
⑤.Device mounted on 1 in^2 FR-4 board with 2oz. double-sided Copper, in a still air environment with T_A=25℃.The current rating is based on the t≤10s thermal resistance rating.

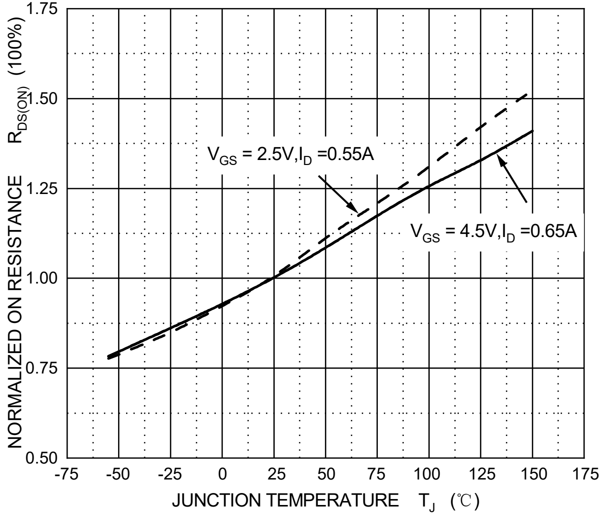
Typical Characteristics

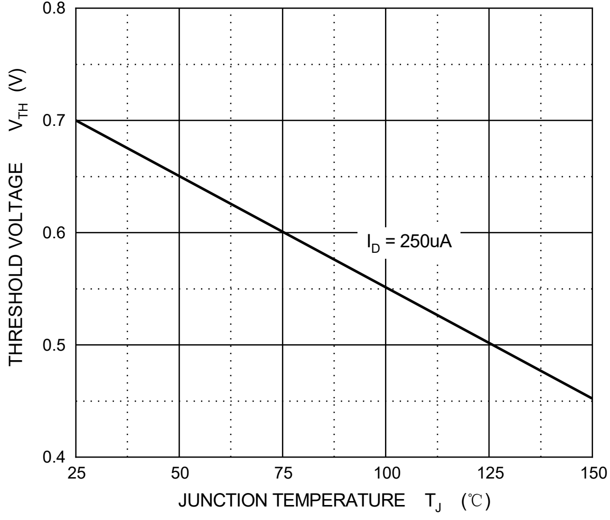

Output Characteristics


Transfer Characteristics

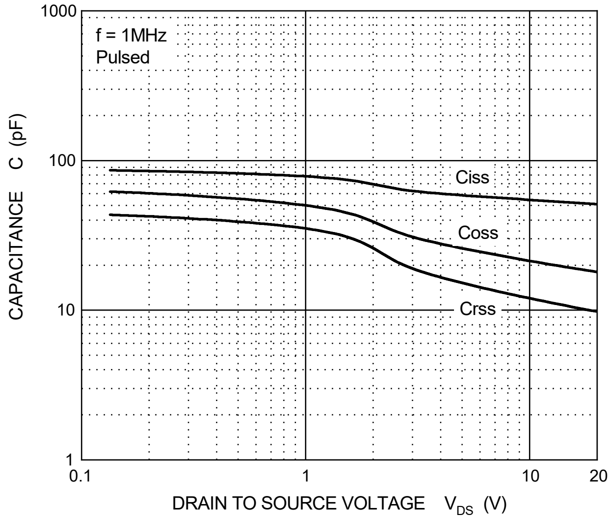

On Resistance vs. Drain Current

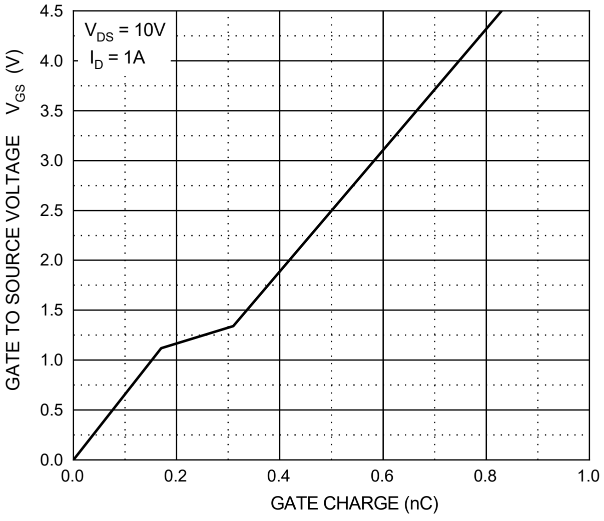

On Resistance vs. Gate-Source Bias

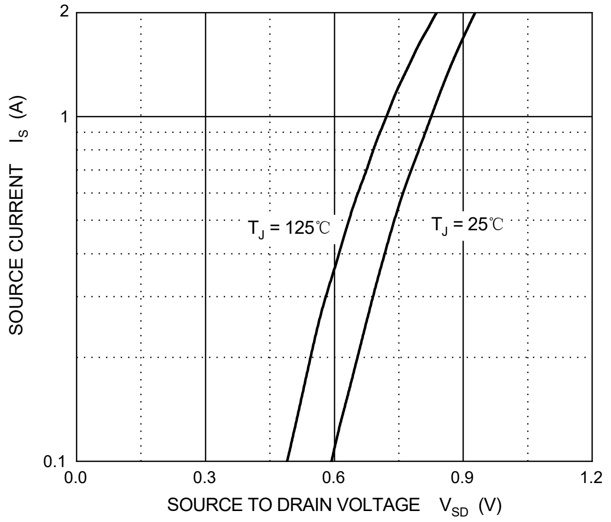

On Resistance vs. Junction Temperature

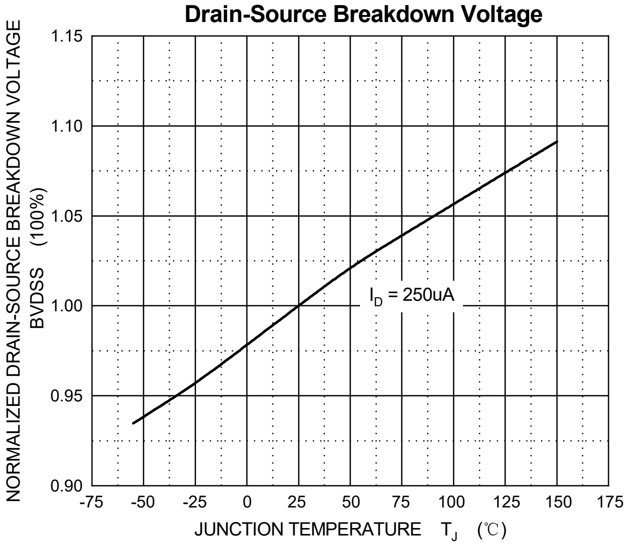

Gate-Source Threshold Voltage

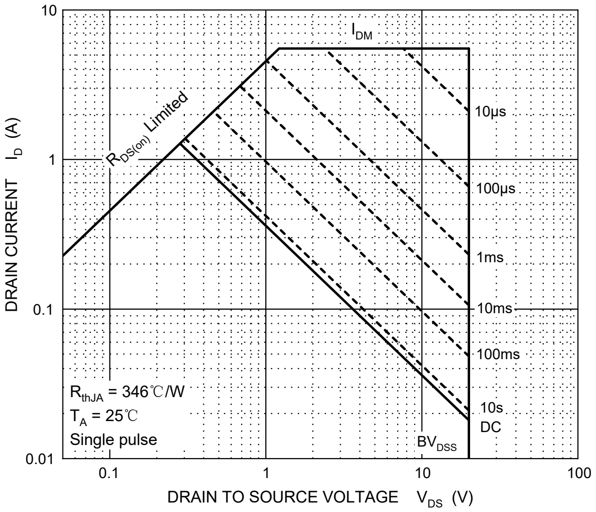
Typical Characteristics


Typical Capacitances


Gate Charge

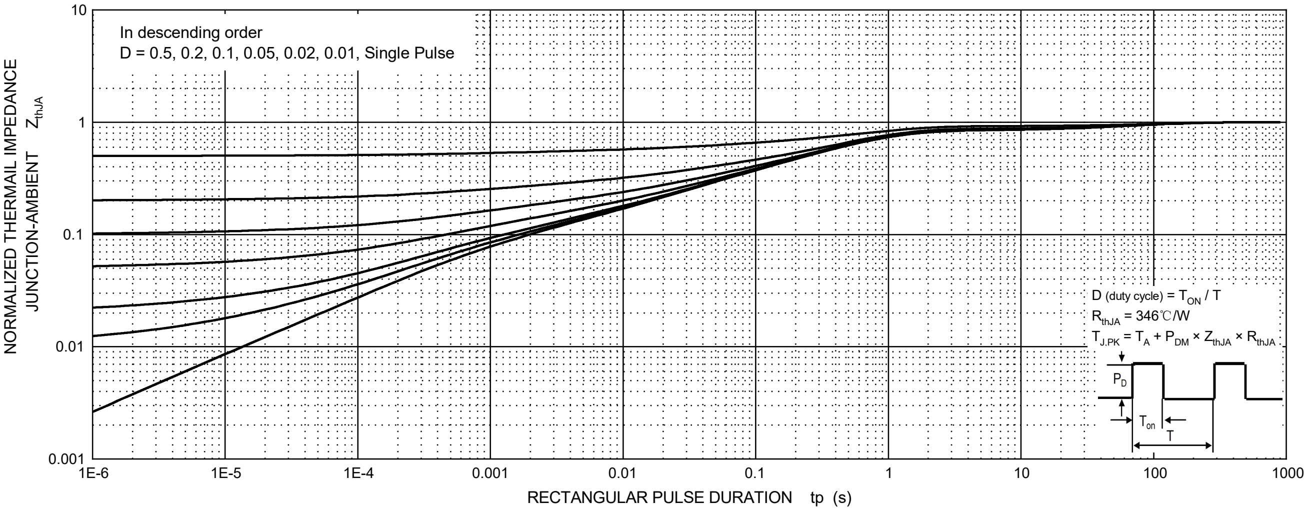

Source-Drain Diode Forward Characteristics


Drain-Source Breakdown Voltage

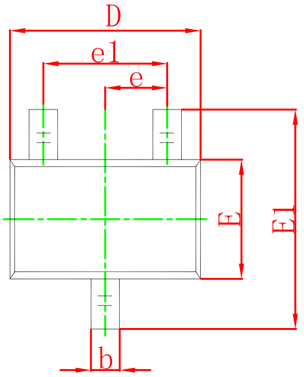

Maximum Safe Operating Area

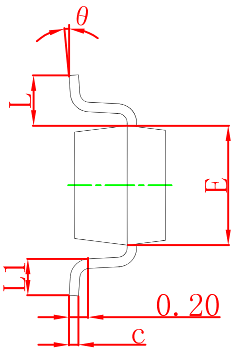
Typical Characteristics

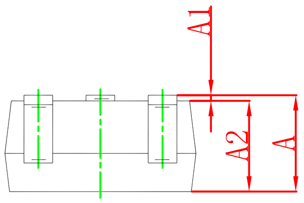
Transient Thermal Impedance, Junction-Ambient



SOT-323 Package Outline Dimensions

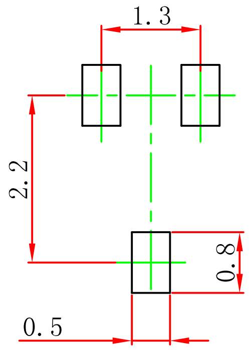






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

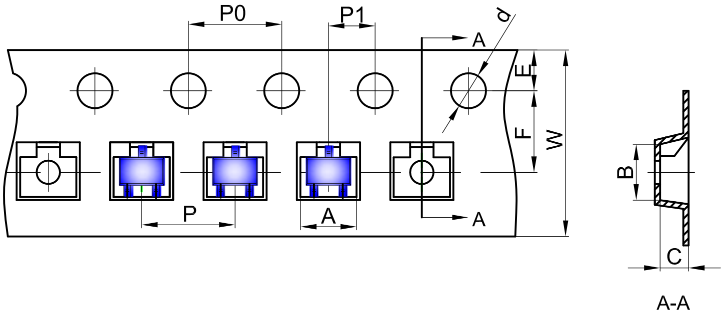
SOT-323 Suggested Pad Layout



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

SOT-323 Tape and Reel

SOT-323 Embossed Carrier Tape

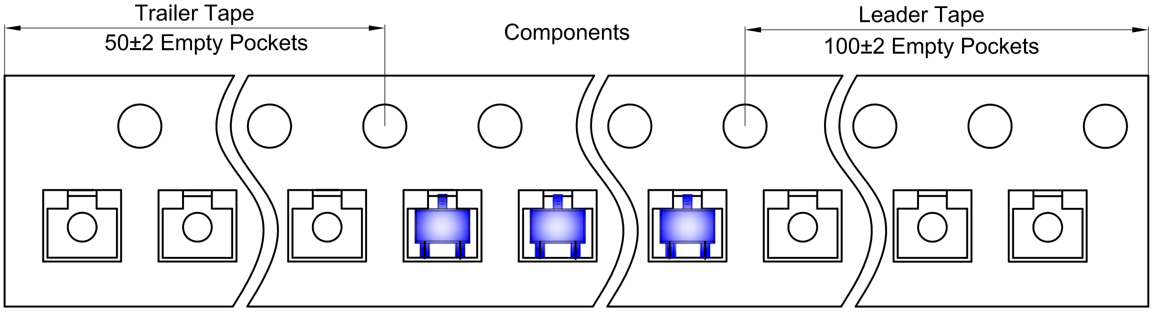


Packaging Description:

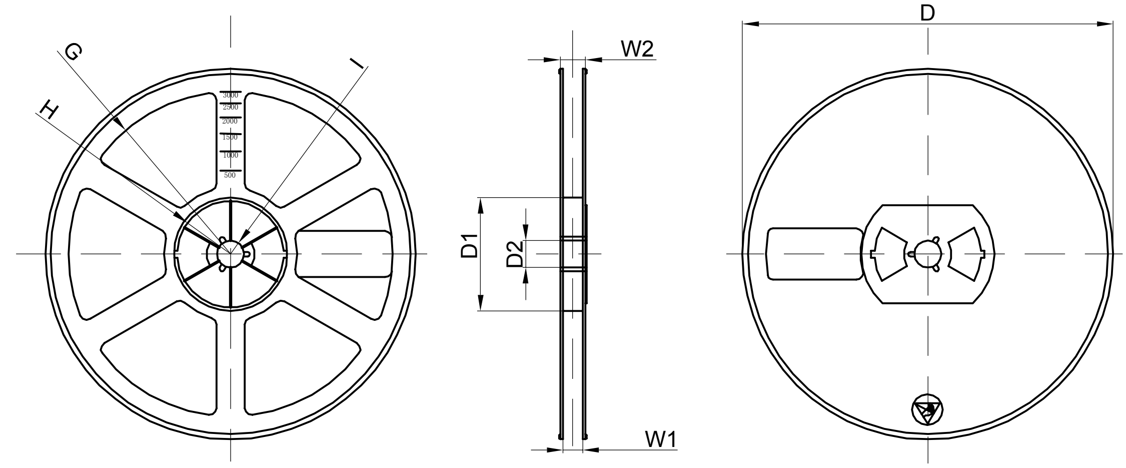
SOT-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm 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-323	2.25	2.55	1.19	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00

SOT-323 Tape Leader and Trailer



SOT-323 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	