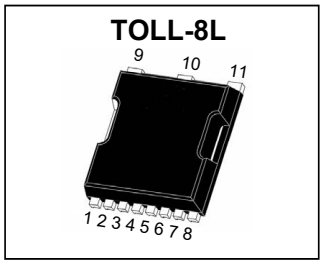
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

TOLL-8L Plastic-Encapsulate MOSFET

CJTL1R5SN10MS N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$TYP	I_D
100V	1.2mΩ@10V	330A



DESCRIPTION

The CJTL1R5SN10MS uses shielded gate trench technology that is uniquely optimized to provide the most efficient high frequency switching performance. Both conduction and switching power losses are minimized due to an extremely low combination of $R_{DS(on)}$ and Q_g. This device is ideal for high-frequency switching and synchronous rectification. It can be used in a wide variety of applications.

FEATURES

- High Power and current handing capability
- Load switch
- High density cell design for ultra low $R_{DS(ON)}$
- Lead free product is acquired
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

APPLICATIONS

- DC/DC Converter
- Ideal for high-frequency switching and synchronous

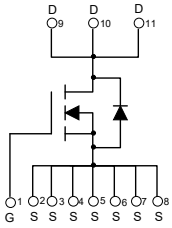
MARKING

TL1R5SN10MS = Part No.

Solid dot = Pin1 indicator.

XXXX = Code.

EQUIVALENT CIRCUIT



MAXIMUM RATINGS (T_J=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	Ñ20	V
Continuous Drain Current	T_C =25℃	I_D	330	A
	T_C =100℃		211	A
Pulsed Drain Current		I_{DM} ①②	1320	A
Continuous Drain Current	T_A =25℃	I_D	26	A
	T_A =75℃		20	A
Single Pulsed Avalanche Energy		E_{AS} ③	1600	mJ
Maximum Power Dissipation		P_D ①	313	W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$ ⑥	55	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$ ①	0.4	℃/W
Operating Junction and Storage Temperature Range		T_J , T_{stg}	-55~+150	℃

MOSFET ELECTRICAL CHARACTERISTICS

T_J=25℃ unless otherwise specified

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Off characteristics							
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA		100	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V, V_{GS} =0V	T_J=25℃	-	-	1.0	μA
			T_J=125℃	-	-	100	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V		-	-	±100	nA
On characteristics ④							
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250uA		2.2	3.0	3.8	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =50A		-	1.2	1.5	mΩ
Dynamic characteristics ⑤							
Input capacitance	C_{iss}	V_{DS} =50V,V_{GS} =0V, f =100KHz		-	16370	-	pF
Output capacitance	C_{oss}			-	2300	-	
Reverse transfer capacitance	C_{rss}			-	67	-	
Gate resistance	R_g	f =1MHz		-	1.0	-	Ω
Switching characteristics ⑤							
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=50A		-	246	-	nC
Gate-source charge	Q_{gs}			-	64	-	
Gate-drain charge	Q_{gd}			-	66	-	
Turn-on delay time	$t_{d(on)}$	V_{DS}=50V,I_D=50A, V_{GS}=10V,R_G=6Ω		-	42	-	ns
Turn-on rise time	t_r			-	43	-	
Turn-off delay time	$t_{d(off)}$			-	115	-	
Turn-off fall time	t_f			-	46	-	
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD} ④	V_{GS} =0V, I_S=50A		-	-	1.1	V
Continuous drain-source diode forward current	I_S ①			-	-	330	A
Pulsed drain-source diode forward current	I_{SM} ①②			-	-	1320	A
Reverse recovery time	trr	di_S/dt = 600A/μs, I_S = 50A, V_{DD} = 50V		-	47	-	ns
Reverse recovery charge	Qrr			-	636	-	nC

Notes:

1.T_C=25℃ Limited only by maximum temperature allowed.

2.P_W≤10μs, Duty cycle≤1%.

3.EAS condition: V_{DD}=50V,V_{GS}=10V, L=0.5mH, R_g=25Ω Starting T_J = 25℃.

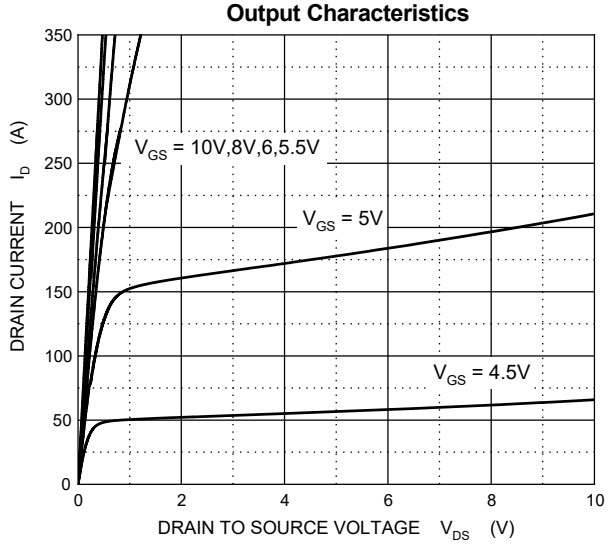
4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

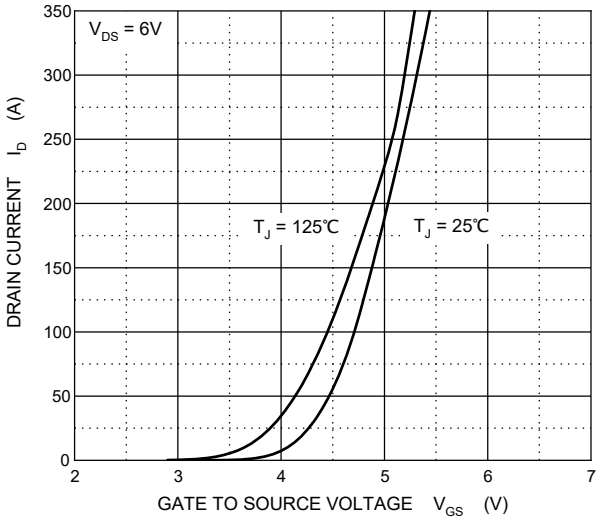
6.Device mounted on 1 in^2 FR-4 board with 2oz. double-sided Copper, in a still air environment with T_A=25℃.

Typical Characteristics (T_J = 25℃, unless otherwise specified)

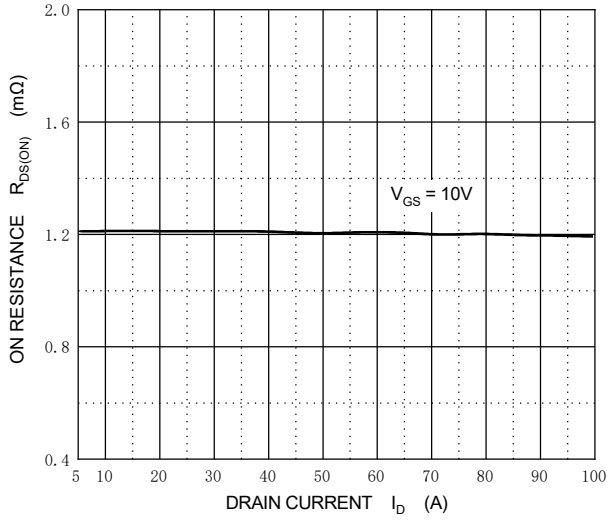
Output Characteristics



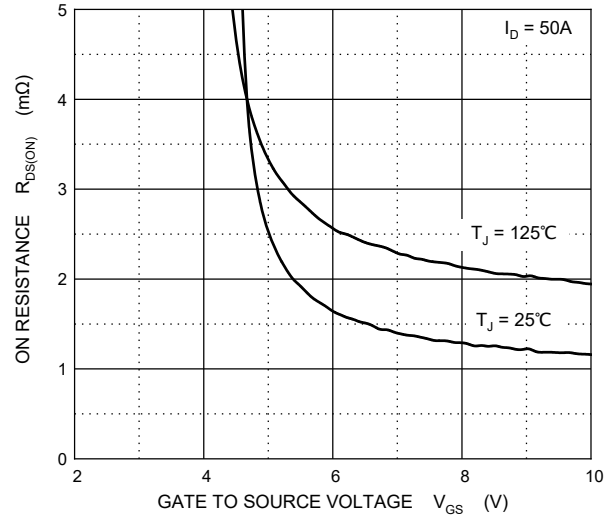
Transfer Characteristics



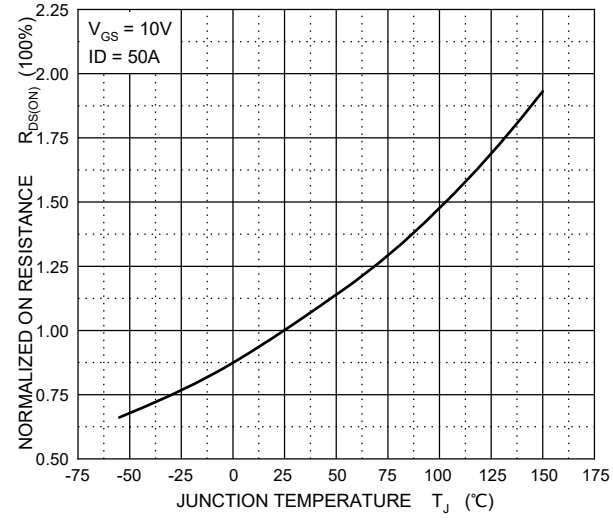
On Resistance vs. Drain Current



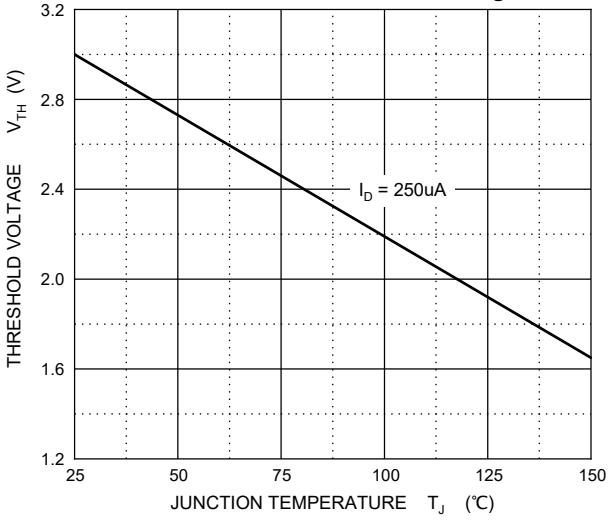
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature

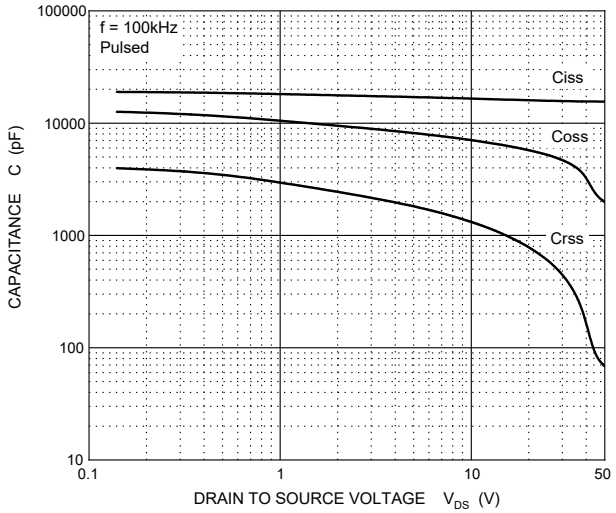


Gate-Source Threshold Voltage

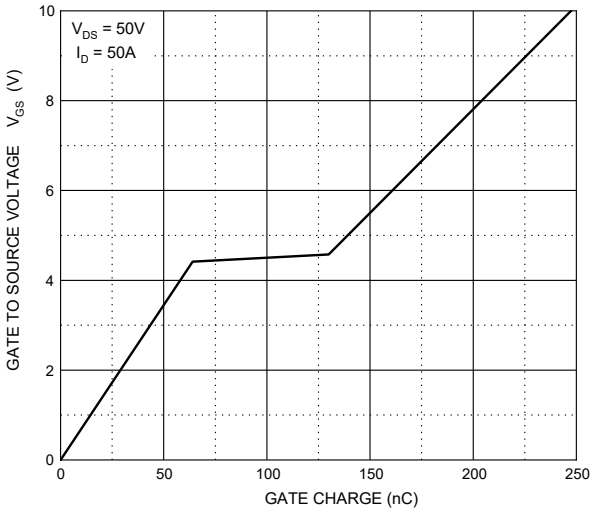


Typical Characteristics (T_J = 25℃, unless otherwise specified)

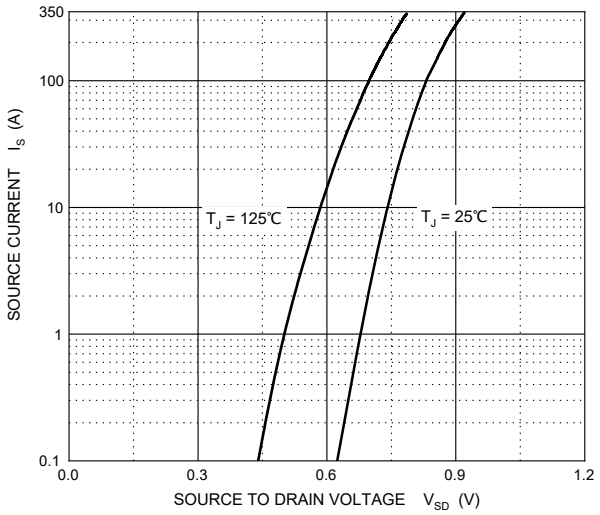
Typical Capacitances



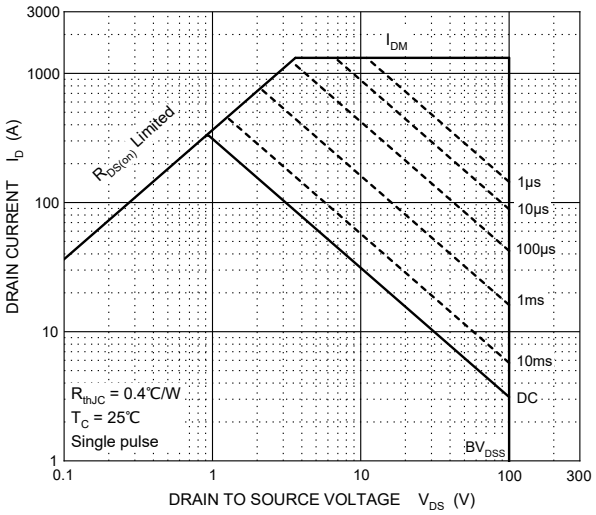
Gate Charge



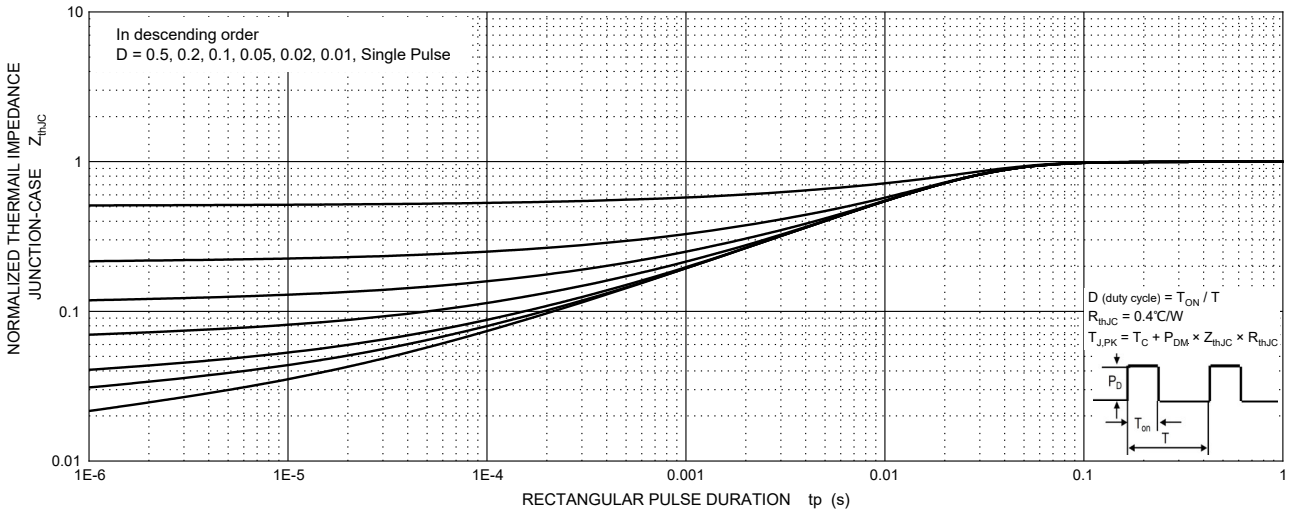
Source-Drain Diode Forward Characteristics



Maximum Safe Operating Area

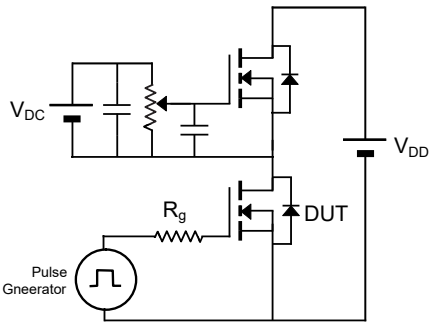


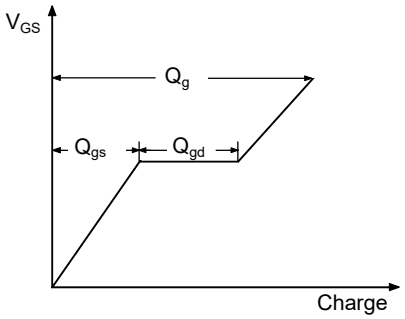
Transient Thermal Impedance, Junction-Case



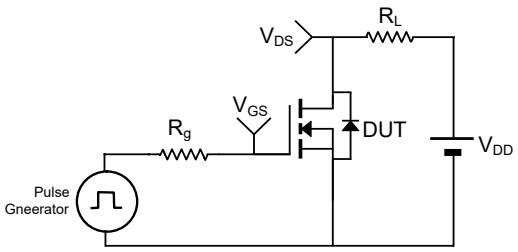
TEST CIRCUIT AND WAVEFOMRS

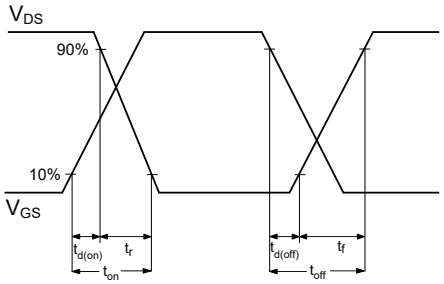
Gate Charge



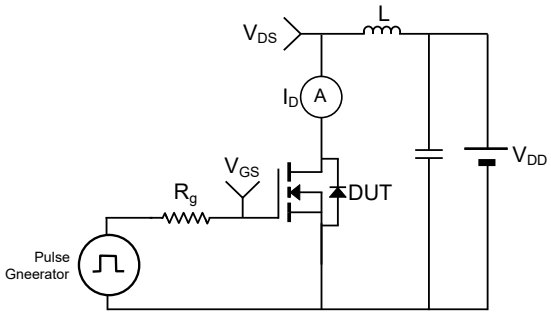


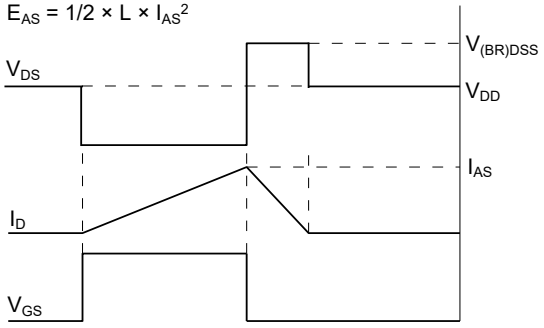
Resistive Load Switching Time



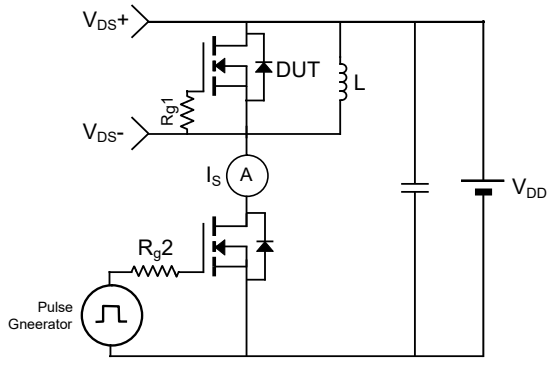


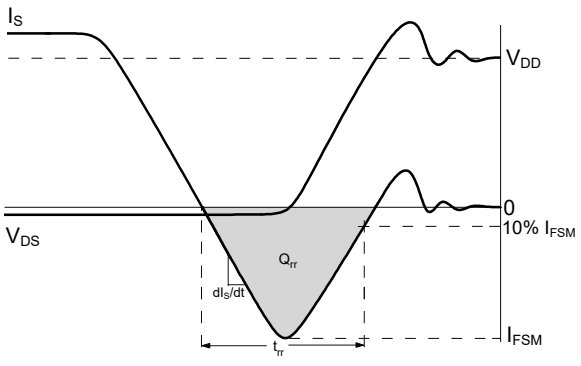
Un-clamped Inductive Load Switching



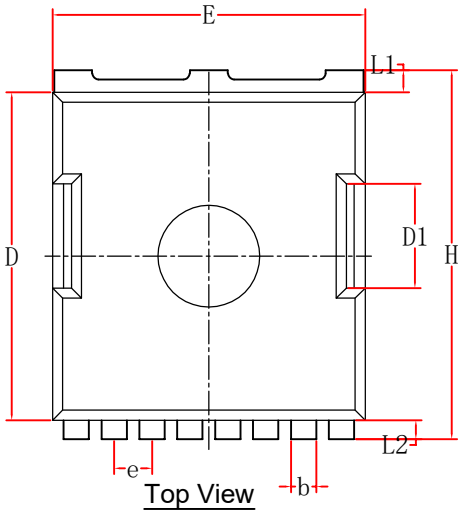


Drain-Source Body Diode Reverse Recovery

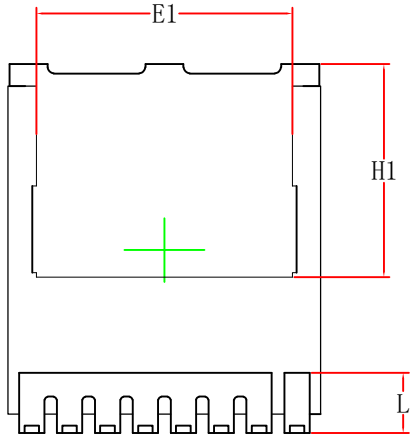




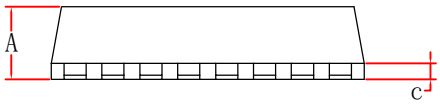
TOLL-8L PACKAGE OUTLINE DIMENSIONS



Top View
[顶视图]



Bottom View
[背视图]

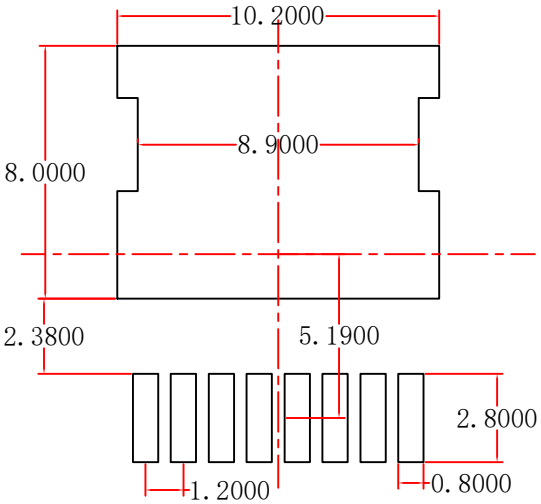


Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.40	0.087	0.094
b	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
D	10.28	10.58	0.405	0.417
D1	3.30BSC.		0.130BSC.	
E	9.70	10.10	0.382	0.398
E1	8.00	8.40	0.315	0.331
e	1.20BSC.		0.047BSC.	
H	11.48	11.88	0.452	0.468
H1	7.10BSC.		0.280 BSC.	
L	1.55	1.95	0.061	0.077
L1	0.50	0.90	0.020	0.035
L2	0.50	0.70	0.020	0.028

Notes：
1 Dimensions exclusive of mold gate burrs.
2 Dimensions exclusive of mold flash and cutting burrs.

TOLL-8L Suggested Pad Layout

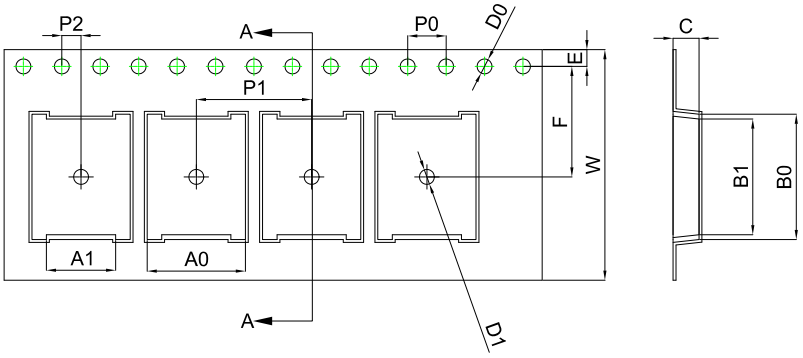


Notes：
1 Controlling dimension：in millimeters.
2 General tolerance:±0.05mm.
3 The pad layout is for referance purpose only.

NOTICE
JSCJ reservesthe right to make modifications,enhancements,improvements,corrections or other changes without further notice to any product herein.JSCJ does not assume any liability arising out of the application or use of any product described herein.

TOLL-8L Tape and Reel

TOLL-8L Embossed Carrier Tape

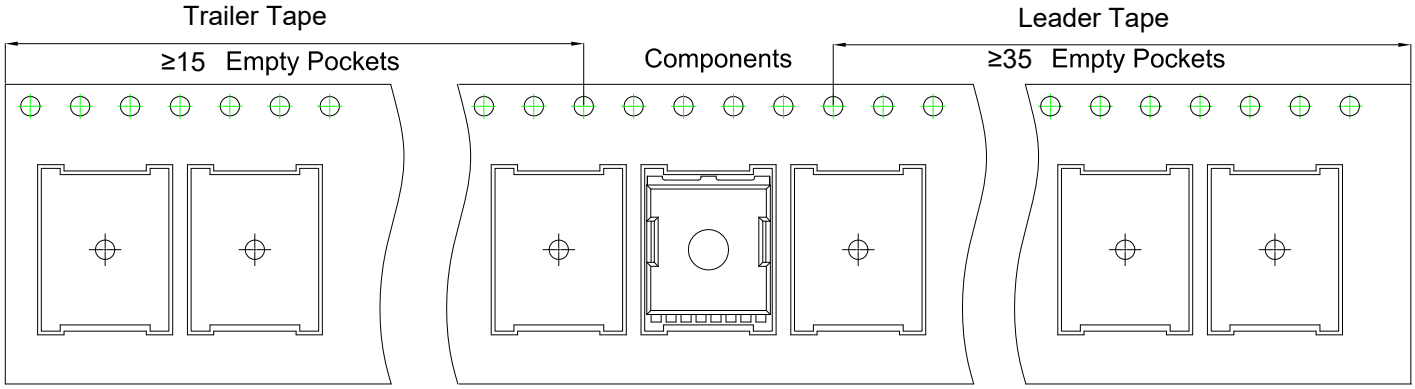


Packaging Description:

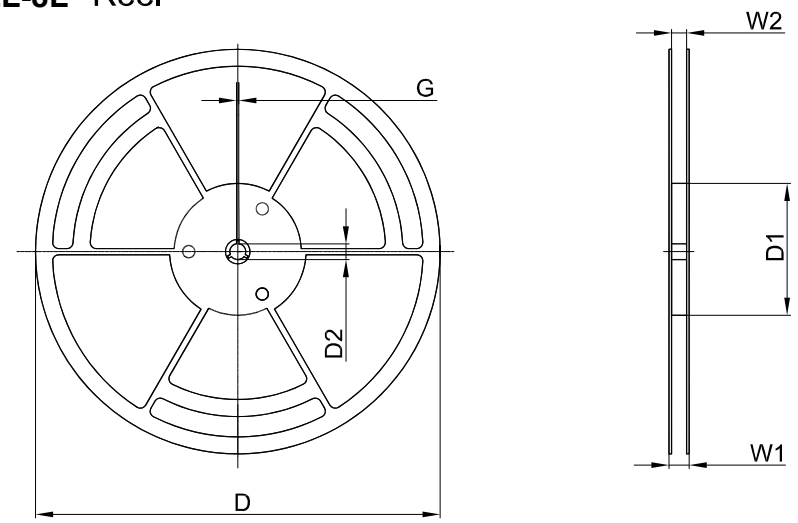
TOLL-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with **2,000** units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter													
Pkg type	A0	A1	B0	B1	C	D0	D1	E	F	P0	P1	P2	W
TOLL-8L	10.22	7.20	12.04	13.04	2.70	1.55	1.55	1.75	11.50	4.00	12.00	2.00	24.00

TOLL-8L Tape Leader and Trailer



TOLL-8L Reel



Dimensions are in millimeter						
Reel Option	**D**	**D1**	**D2**	**G**	**W1**	**W2**
13" Dia	φ330.00	100.00	13.00	2.00	28.7	24.4

Reel	Reel Size	Box	Box Size (mm)	Carton	Carton Size (mm)
2,000 pcs	13 inch	2,000 pcs	360×360×65	10,000 pcs	378×358×382