SZCJ

Shenzhen Changji Semiconductor Co., LTD.

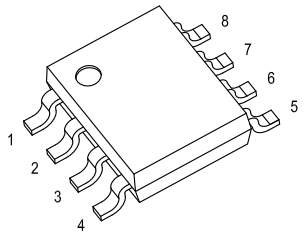
JSCJ

SOP8 Plastic-Encapsulate MOSFETS

CJQ20N03B N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$TYP	I_D
30 V	3.5mΩ@10V	20A
	4.3mΩ@4.5V	

SOP8



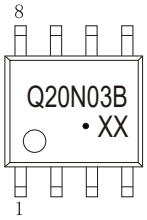
DESCRIPTION

The CJQ20N03B uses advanced trench technology to provide excellent $R_{DS(ON)}$, shoot-through immunity, body diode characteristics and ultra-low gate resistance. This device is ideally suited for use as a low side switch in Notebook CPU core power conversion.

APPLICATIONS

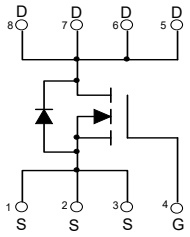
- Battery Switch
- Load Switch

MARKING



Q20N03B = Device code
Solid dot = Green molding compound device, if none, the normal device
XX = Code

Equivalent Circuit



MAXIMUM RATINGS (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D ①	20	A
Pulsed Drain Current	I_{DM} ②	80	A
Single Pulsed Avalanche Energy	E_{AS} ③	101	mJ
Power Dissipation	P_D ⑤	2.8	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$ ⑤	45	℃/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 =250uA		30	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, V_{GS} =0V	T_J =25℃	-	-	1.0	μA
			T_J =125℃	-	-	100	
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 =250μA		1.0	1.5	2.5	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =10A		-	3.5	4.5	mΩ
		V_{GS} =4.5V, I_D =10A		-	4.3	6.5	mΩ
Dynamic characteristics							
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V, f =1MHz		-	3013	-	pF
Output capacitance	C_{oss}			-	389	-	
Reverse transfer capacitance	C_{rss}			-	320	-	
Gate resistance	R_g	f =1MHz		-	4.0	-	Ω
Switching characteristics							
Total gate charge	Q_g	V_{GS}=4.5V, V_{DD}=15V, I_D=10A		-	26	-	nC
Total gate charge	Q_g	V_{GS}=10V, V_{DD}=15V, I_D=10A		-	53	-	
Gate-source charge	Q_{gs}			-	7.8	-	
Gate-drain charge	Q_{gd}			-	11	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, V_{GS}=10V, R_L=1.5Ω , R_g=10Ω		-	15.8	-	ns
Turn-on rise time	t_r			-	88	-	
Turn-off delay time	$t_{d(off)}$			-	106	-	
Turn-off fall time	t_f			-	66	-	
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD} ④	V_{GS} =0V, I_S=20A		-	-	1.2	V
Continuous drain-source diode forward current	I_S ①			-	-	20	A
Pulsed drain-source diode forward current	I_{SM} ①②			-	-	80	A

Notes:

1.T_A=25°℃.

2.Limited only by maximum temperature allowed.

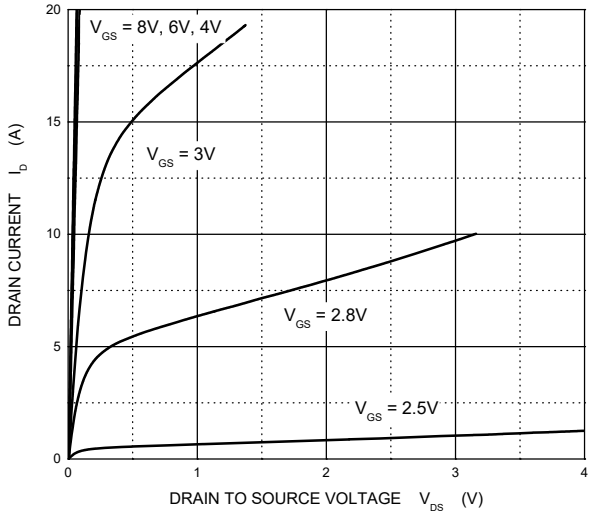
3.V_{DD}=20V,V_{GS}=10V, L=0.1mH, Rg=25Ω Starting T_J= 25°℃.

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

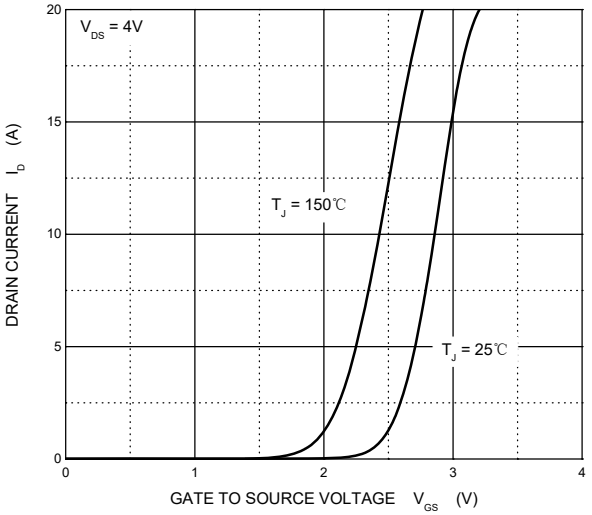
5.Device mounted on 1 in² FR-4 board with 2oz. single-sided Copper, in a still air environment with T_A=25 ℃.

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

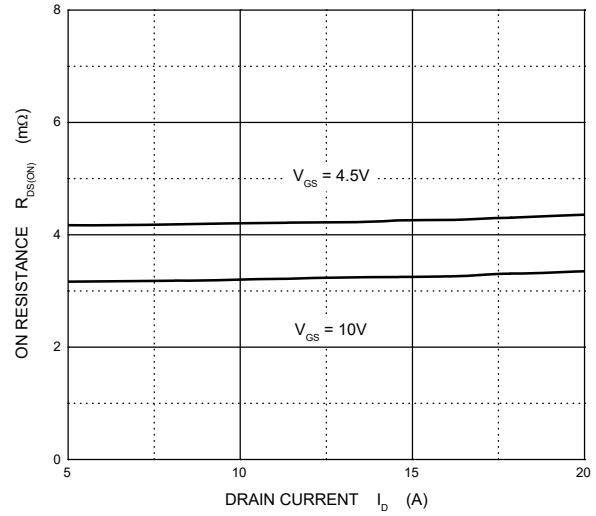
Output Characteristics



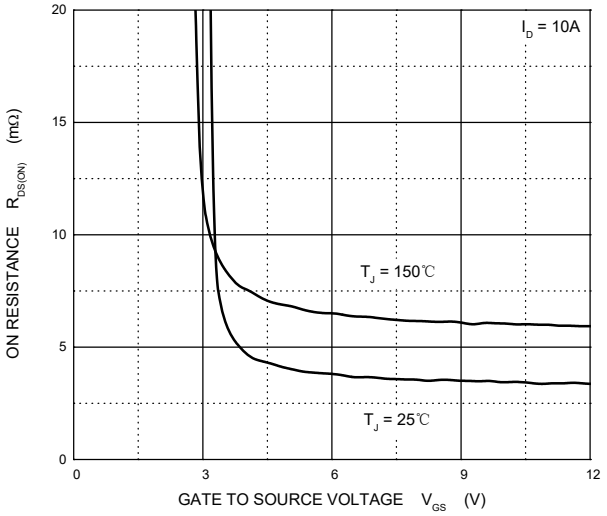
Transfer Characteristics



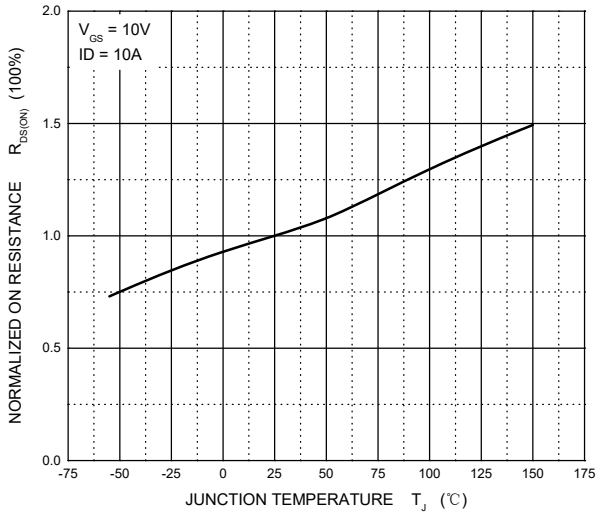
On Resistance vs. Drain Current



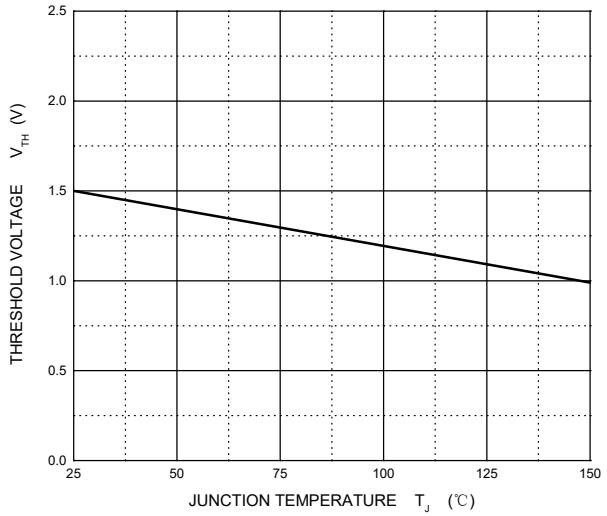
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature

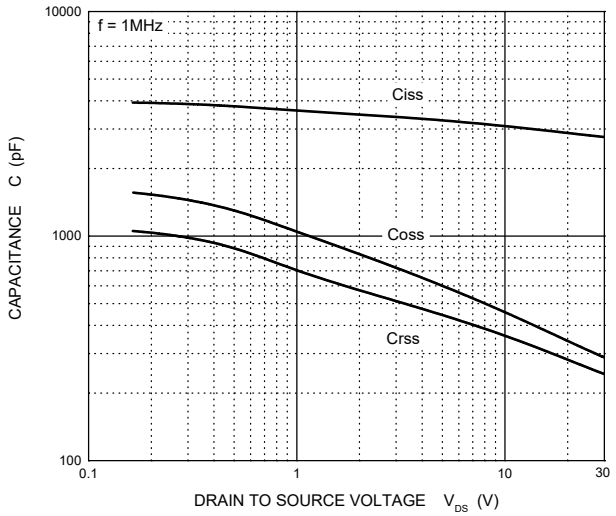


Gate-Source Threshold Voltage

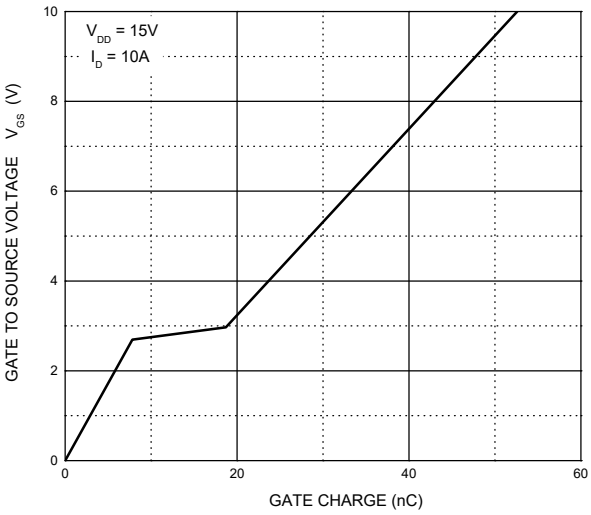


Typical Characteristics (T_J = 25℃, unless otherwise specified)

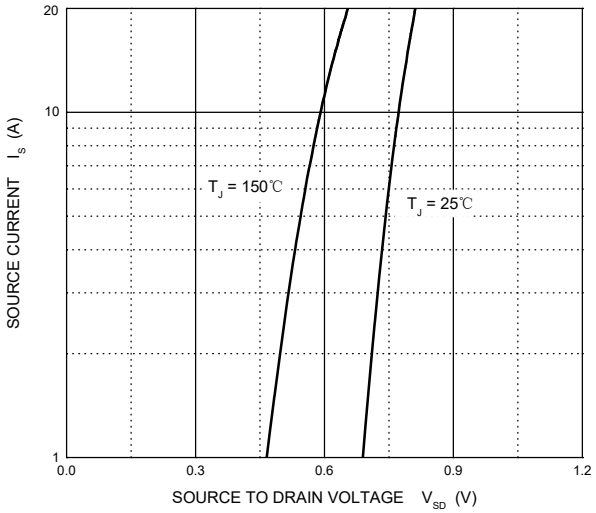
Typical Capacitances



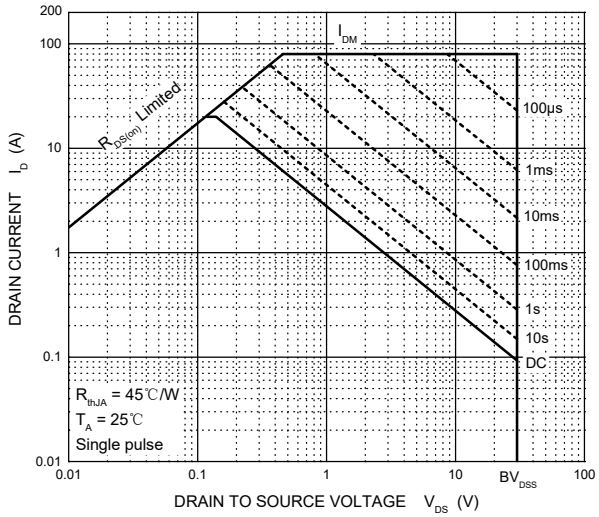
Gate Charge



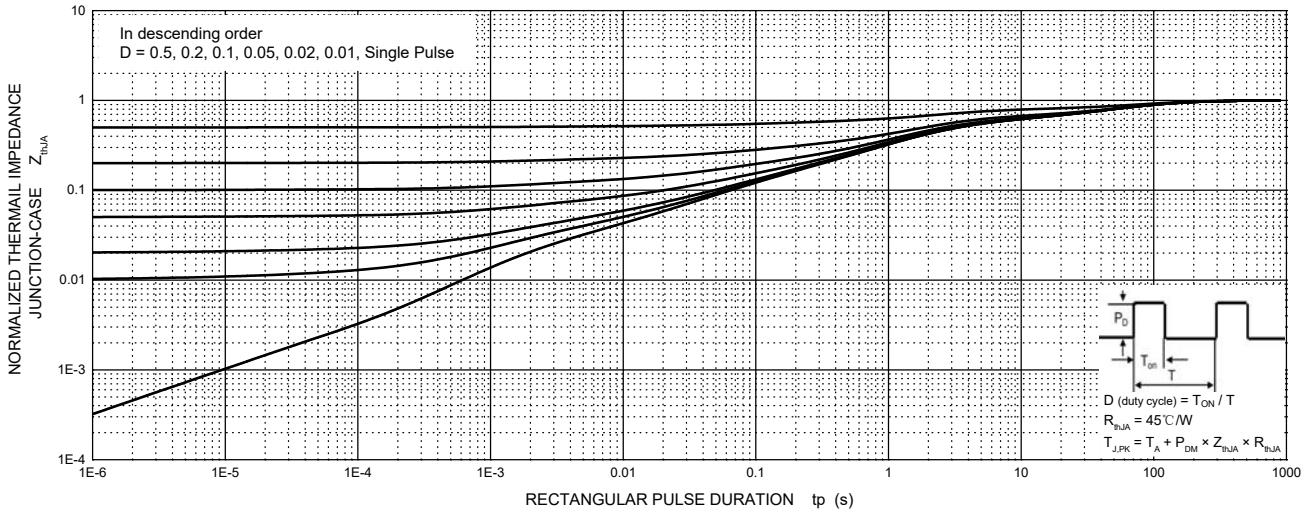
Source-Drain Diode Forward Characteristics



Maximum Safe Operating Area

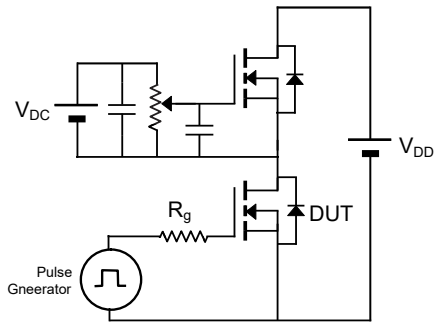


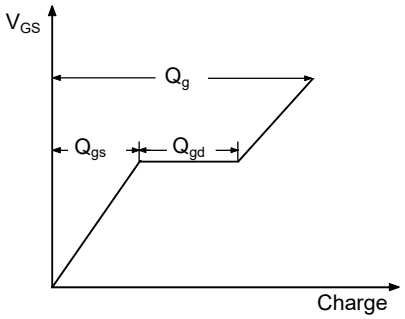
Transient Thermal Impedance, Junction-Case



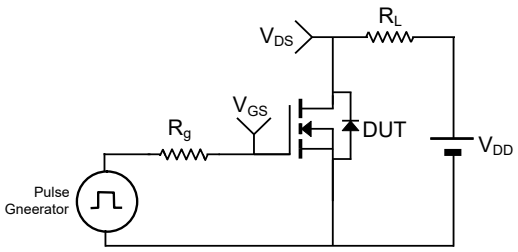
TEST CIRCUIT AND WAVEFOMRS

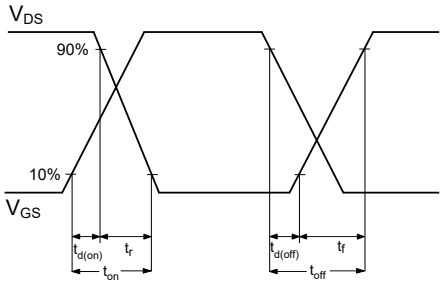
Gate Charge



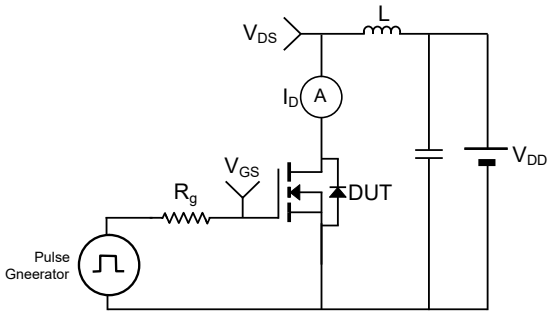


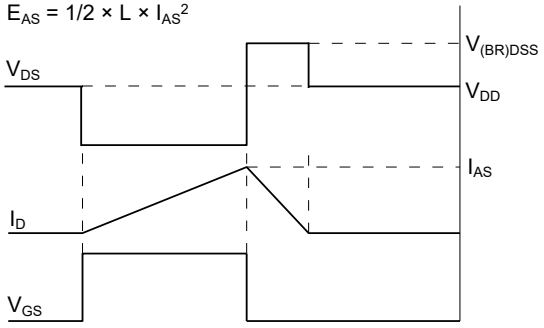
Resistive Load Switching Time



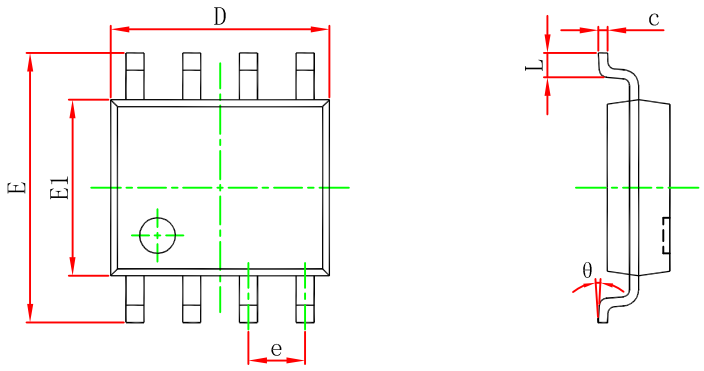


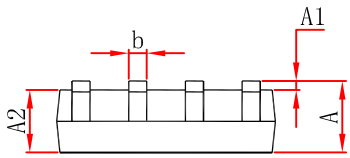
Un-clamped Inductive Load Switching





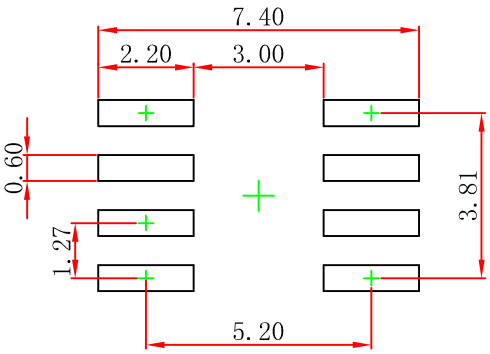
SOP8 Package Outline Dimensions





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.450	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
e	1.270（BSC）		0.050（BSC）	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

SOP8 Suggested Pad Layout



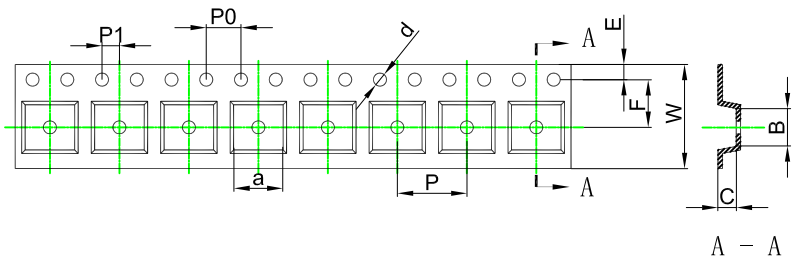
Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

NOTICE

SZCJ reserves the right to make modifications,enhan nts,improvements,corrections or other es without further notice to any product herein. SZCJ does not assume any liability arising out of the application or use of any product described h

SOP8 Tape and Reel

SOP8 Embossed Carrier Tape



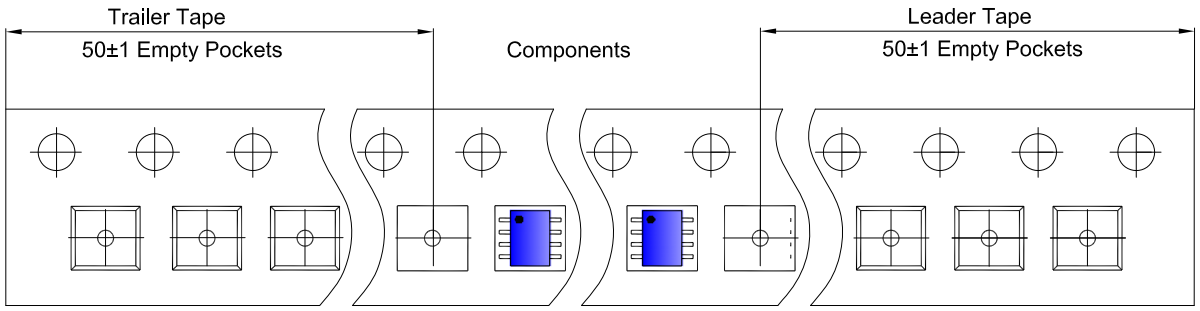
Packaging Description:

SOP8 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 4,000 units per 13" or 33cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

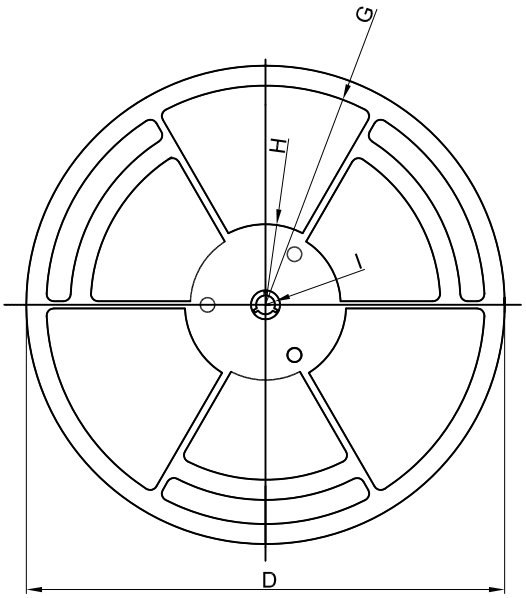
ALL DIM IN mm

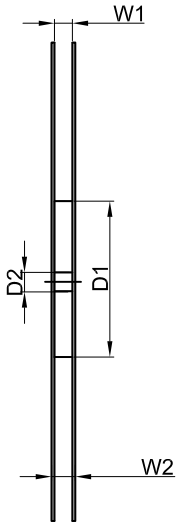
Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOP8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOP8 Tape Leader and Trailer



SOP8 Reel





Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13"Dia	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
4,000 pcs	13 inch	8,000 pcs	360×360×65	40,000 pcs	378×358×382	