SZCJ

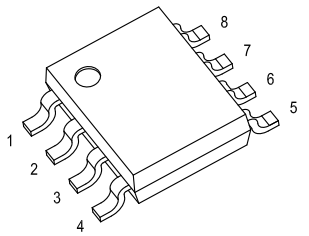
Shenzhen Changji Semiconductor Co., LTD.

SOP8 Plastic-Encapsulate MOSFETS

CJQ13P04 P-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$TYP	I_D
-40 V	11mΩ@-10V	-13A
	14.5mΩ@-4.5V	

SOP8



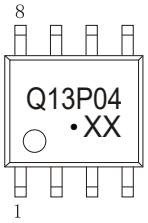
DESCRIPTION

The CJQ13P04 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications

APPLICATIONS

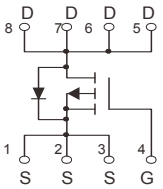
- Battery protection applications
- Load switch

MARKING



Q13P04 = Device code
Solid dot = Green molding compound device, if none, the normal device
XX = Code

Equivalent Circuit



MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D ①	-13	A
Pulsed Drain Current	I_{DM} ②	-52	A
Single Pulsed Avalanche Energy	E_{AS} ③	230	mJ
Power Dissipation	P_D ⑥	4.0	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$ ⑥	31.25	℃/W
Operating Junction and Storage Temperature Range	T_J ,T_{stg}	-55~+150	℃

MOSFET ELECTRICAL CHARACTERISTICS

T_a=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		-40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-32V, 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			11	15	mΩ
		V_{GS} =-4.5V, I_D =-8A			14.5	22	mΩ
Dynamic characteristics ④⑤							
Input capacitance	C_{iss}	V_{DS} =-25V,V_{GS} =0V, f =1MHz			2626		pF
Output capacitance	C_{oss}				262		
Reverse transfer capacitance	C_{rss}				176		
Switching characteristics ④⑤							
Total gate charge	Q_g	V_{GS}=-4.5V, V_{DS}=-32V, I_D=-10A			22.2		nC
Gate-source charge	Q_{gs}				8.2		
Gate-drain charge	Q_{gd}				8.8		
Turn-on delay time	$t_{d(on)}$	V_{DS}=-20V,I_D=-1A V_{GS}=-10V,R_G=6Ω			23		ns
Turn-on rise time	t_r				10		
Turn-off delay time	$t_{d(off)}$				135		
Turn-off fall time	t_f				46		
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD} ④	V_{GS} =0V, I_S=-1A				-1.2	V
Continuous drain-source diode forward current	I_S ①					-13	A
Pulsed drain-source diode forward current	I_{SM} ②					-52	A

Notes:

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

2.P_W≤10μs, Duty cycle≤1%.

3.EAS condition: V_{DD}=-20V,V_{GS}=-10V, L=0.5mH, R_g=25Ω Starting T_J = 25°℃.

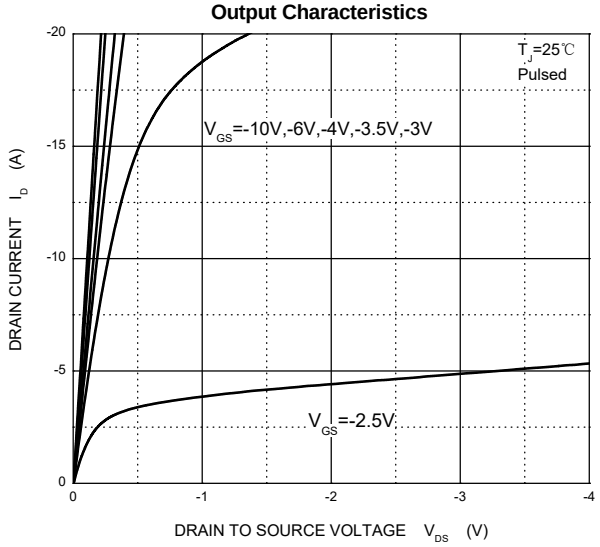
4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

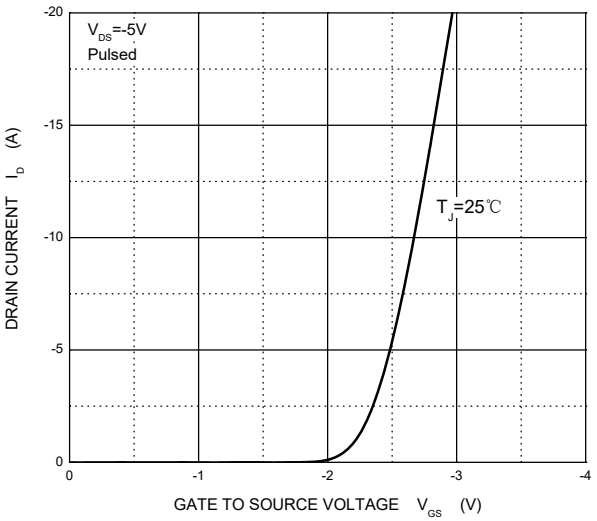
6.Measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25℃,t ≤10sec.

Typical Characteristics

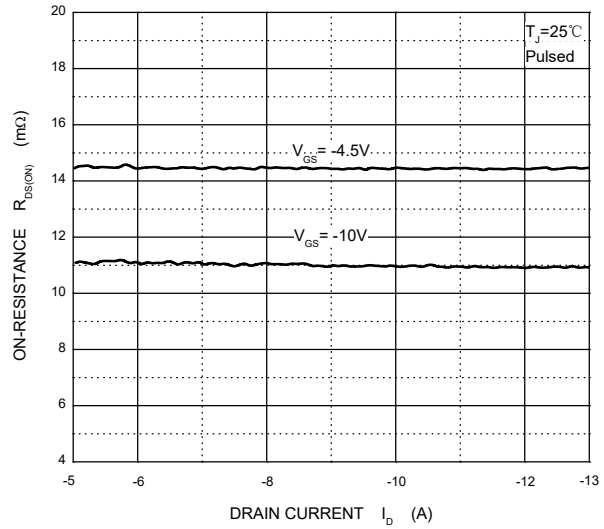
Output Characteristics



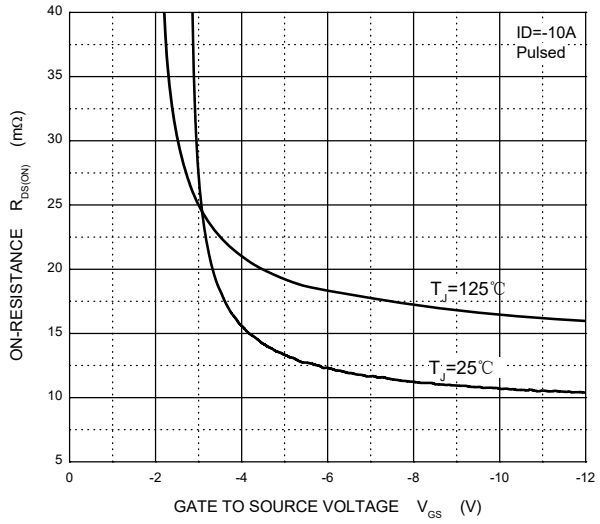
Transfer Characteristics



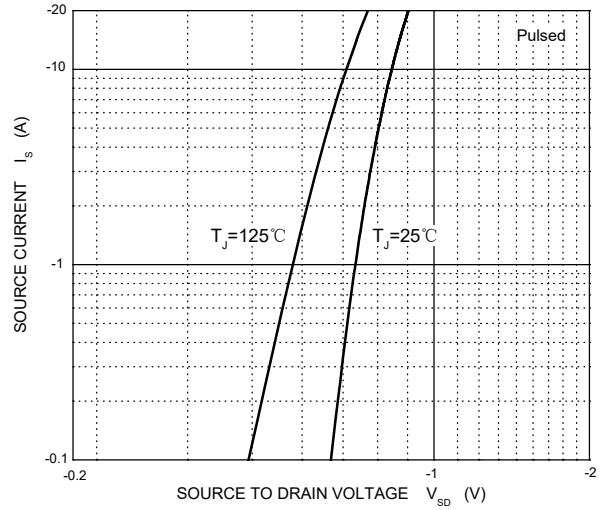
$R_{DS(ON)}$ —— I_D



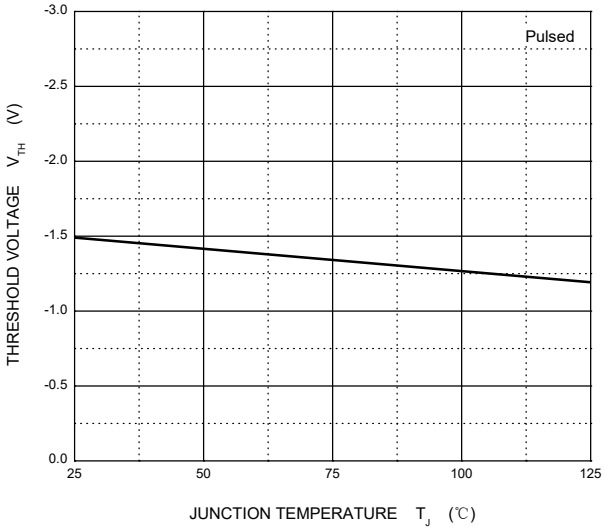
$R_{DS(ON)}$—— V_{GS}



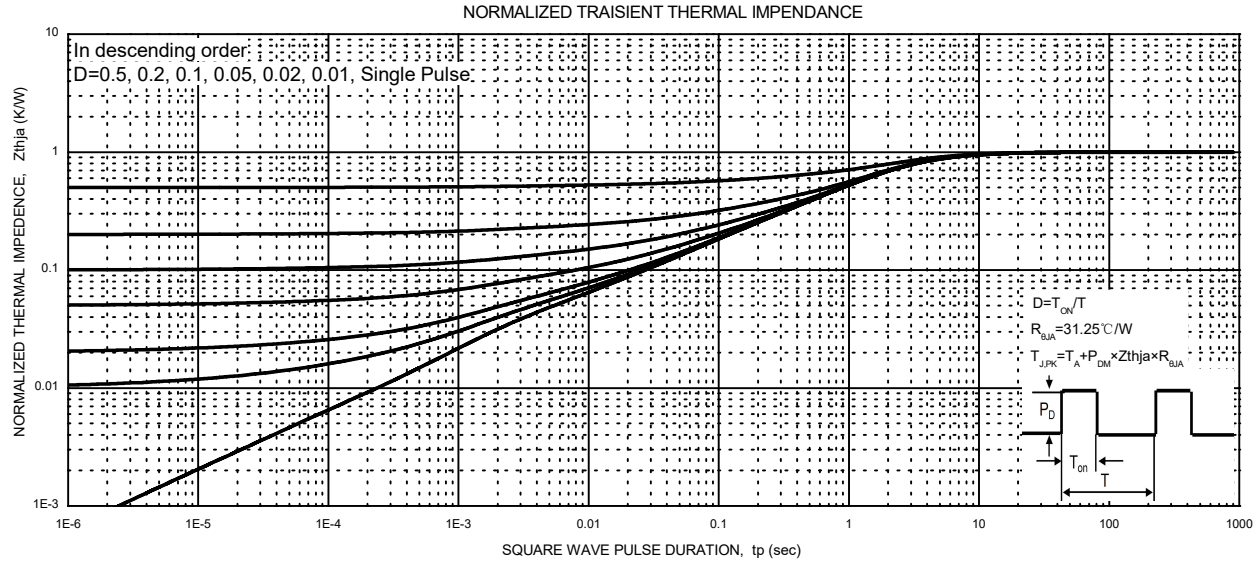
I_S —— V_{SD}

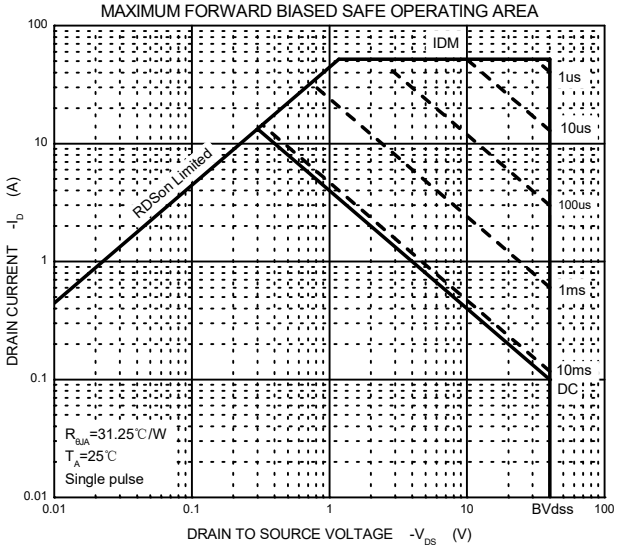


Threshold Voltage

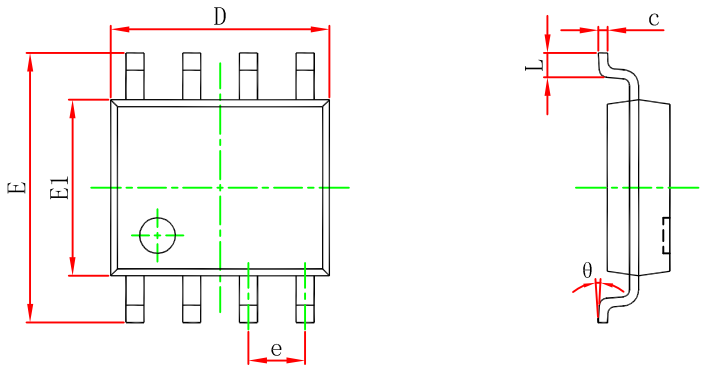


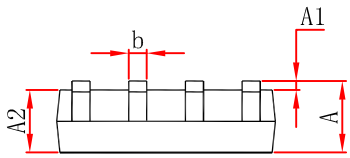
Typical Characteristics





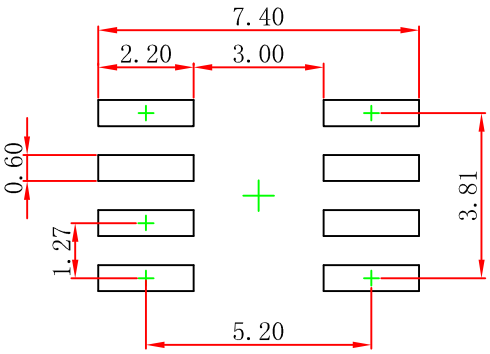
SOP8 Package Outline Dimensions





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



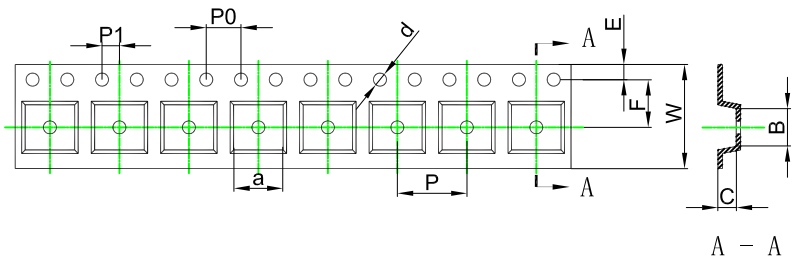
Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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



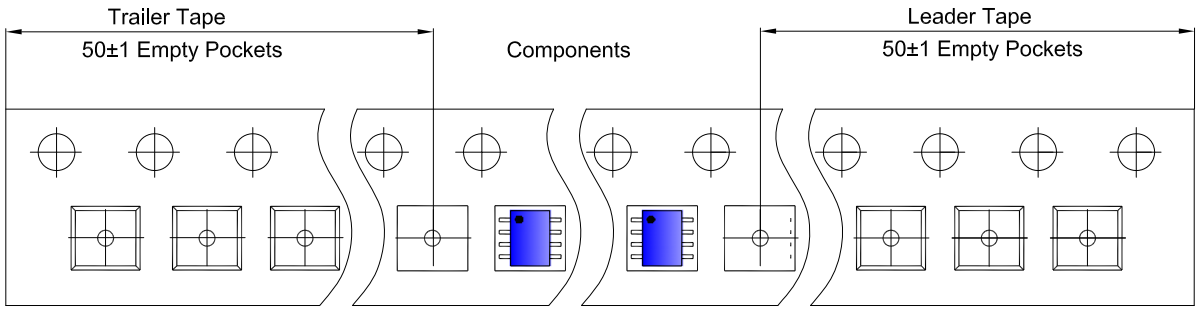
Packaging Description:

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).

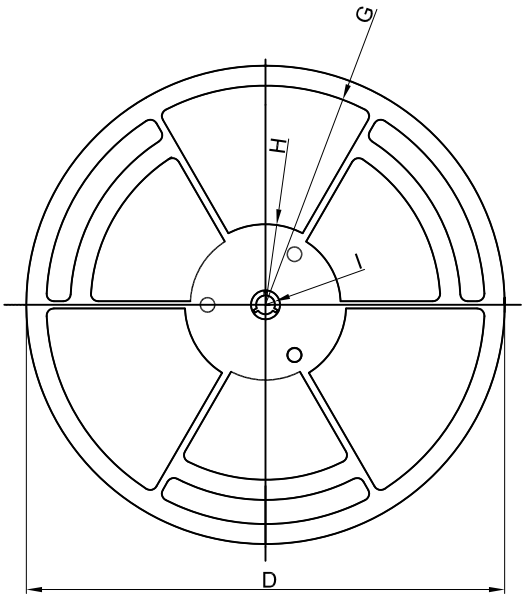
ALL DIM IN mm

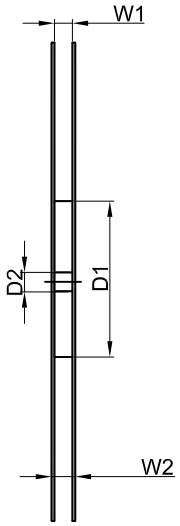
Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOP8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

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	