SZCJ

DFN3.3x3.3A1-8L Plastic-Encapsulate MOSFET

CJAB2R0SN03C2 N-Channel Power MOSFET

DFN3.3x3.3A1-8L



Key Performance Parameters

$V_{BR(DSS)}$	$R_{DS(on)}$TYP	I_D
30V	1.5mΩ@10V	160A
	2.0mΩ@4.5V	

DESCRIPTION

The N-Channel enhancement mode power field effect transistors is using SGT technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.These devices are well suited for high efficiency fast switching applications.

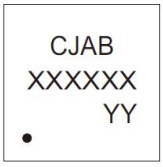
FEATURES

- Battery switch
- Load switch
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current

APPLICATIONS

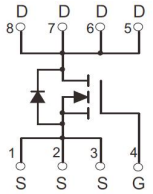
- SMPS and general purpose applications
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

MARKING



XXXXXX = 2R0SN03C2
Solid dot = Pin1 indicator.
YY = Code.

EQUIVALENT CIRCUIT



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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C =25℃	I_D	160	A
	T_C =100℃		101	
Pulsed Drain Current		I_{DM}①②	640	A
Continuous Drain Current	T_A =25℃	I_D	24	A
	T_A =75℃		18.2	
	T_A =100℃		14.6	
Avalanche Current		I_{AS}③	32	A
Single Pulsed Avalanche Energy		E_{AS}③	256	mJ
Power Dissipation		P_D①	104	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 Case	$R_{\theta JC}$	0.9	1.2	℃/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$⑥	45	67	℃/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		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_{GS}=±20V, V_{DS}=0V		-	-	±100	nA
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	$R_{DS(on)}$④	V_{GS}=10V, I_D=20A	T_J=25℃	-	1.5	2.0	mΩ
			T_J=125℃	-	2.2	3.0	
		V_{GS}=4.5V, I_D=10A		-	2.0	3.0	
Forward transconductance	g_{FS}	V_{DS}=5V, I_D=20A		-	105	-	S

Dynamic Characteristics⑤

Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz	-	3147	-	pF
Output capacitance	C_{oss}		-	1430	-	
Reverse transfer capacitance	C_{rss}		-	111	-	
Gate resistance	R_g	f=1MHz	-	3.0	-	Ω
Total gate charge	Q_g	V_{GS}=4.5V, V_{DS}=15V, I_D=20A	-	24.7	-	nC
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=15V, I_D=20A	-	52.2	-	
Gate charge at threshold	$Q_{G(th)}$		-	5.2	-	
Gate-source charge	Q_{gs}		-	8.0	-	
Gate-drain charge	Q_{gd}		-	7.6	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V, V_{GS}=10V, I_D=20A, R_g=1.6Ω	-	6.1	-	ns
Turn-on rise time	t_r		-	4.2	-	
Turn-off delay time	$t_{d(off)}$		-	34	-	
Turn-off fall time	t_f		-	9.9	-	

Reverse 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_S①		-	-	160	A
Pulsed drain-source diode forward current	I_{SM}①②		-	-	640	A
Reverse recovery time	t_{rr}	V_{DD}=20V, I_S=20A, di/dt=500A/μs	-	26	-	ns
Reverse recovery charge	Q_{rr}		-	73	-	nC

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℃.

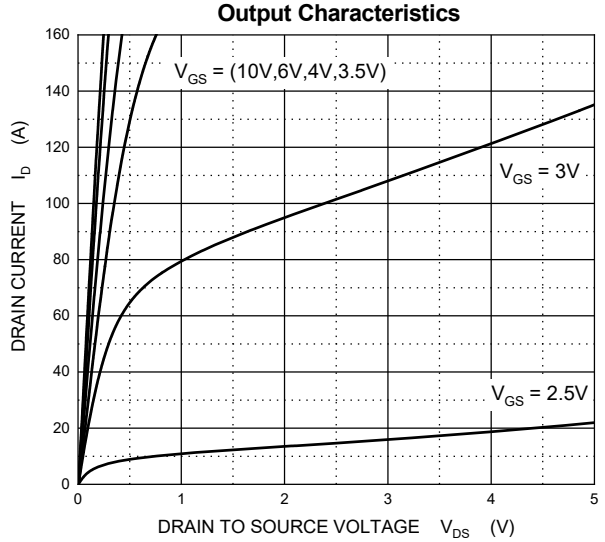
④.Pulse Test : Pulse Width ≤380μs, duty cycle ≤2%.

⑤.Guaranteed by design, not subject to production.

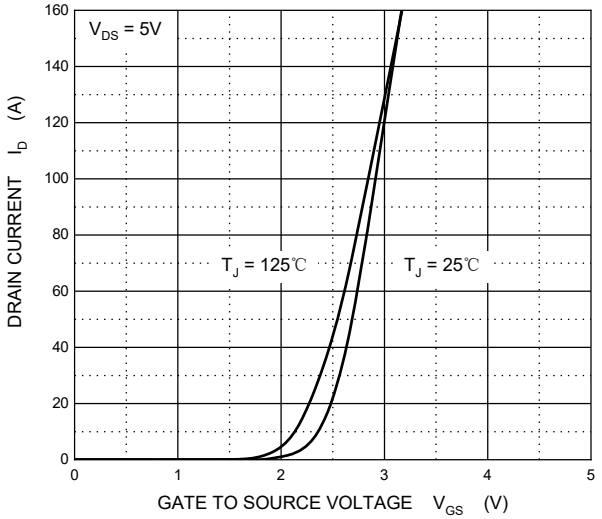
⑥.Device mounted on 1 in^2 FR-4 board with 2oz. double-sided Copper, in a still air environment with T_A=25℃.

Typical Characteristics

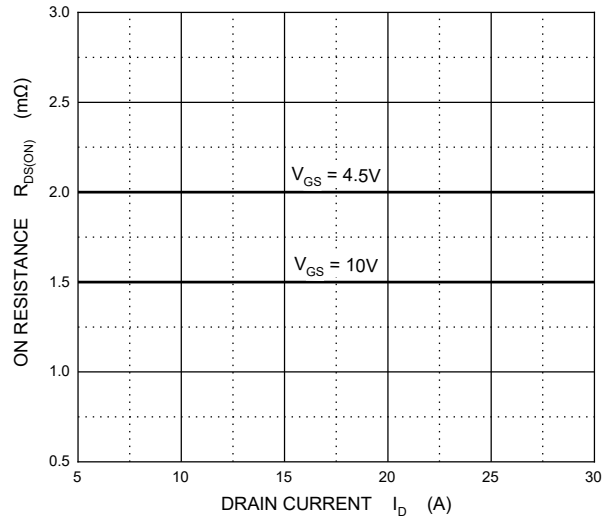
Output Characteristics



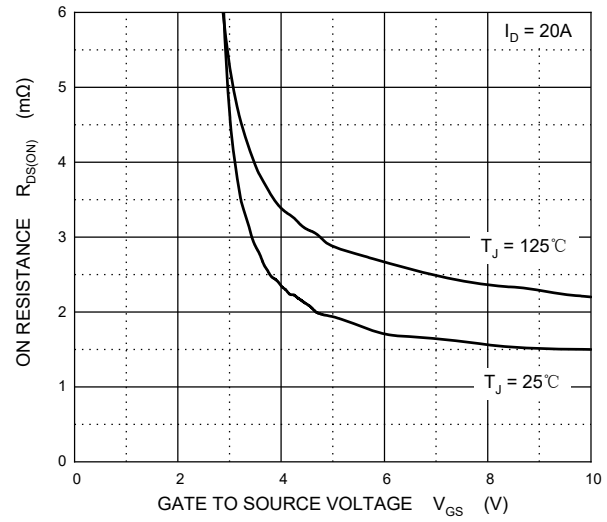
Transfer Characteristics



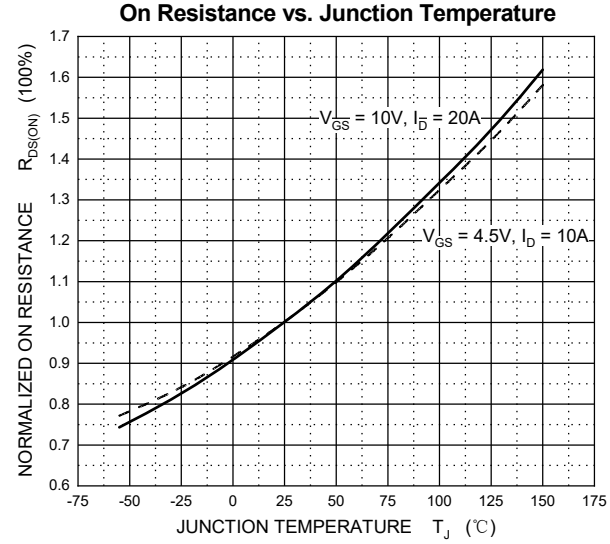
On Resistance vs. Drain Current



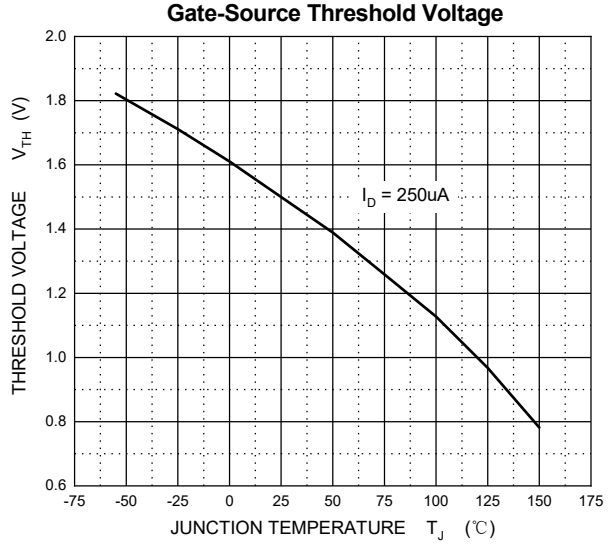
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature

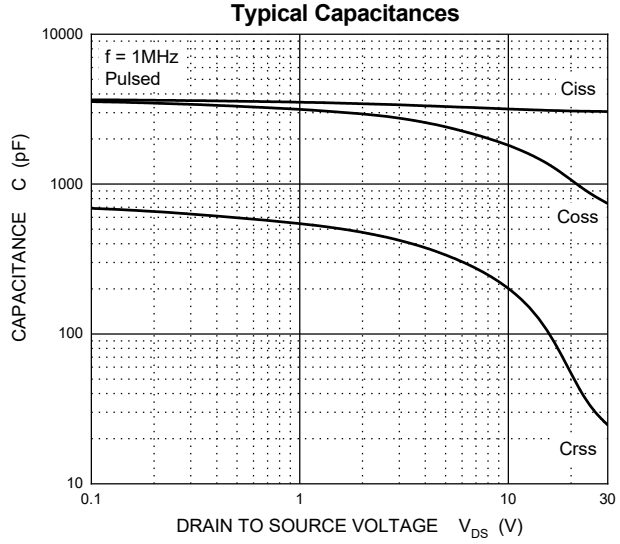


Gate-Source Threshold Voltage

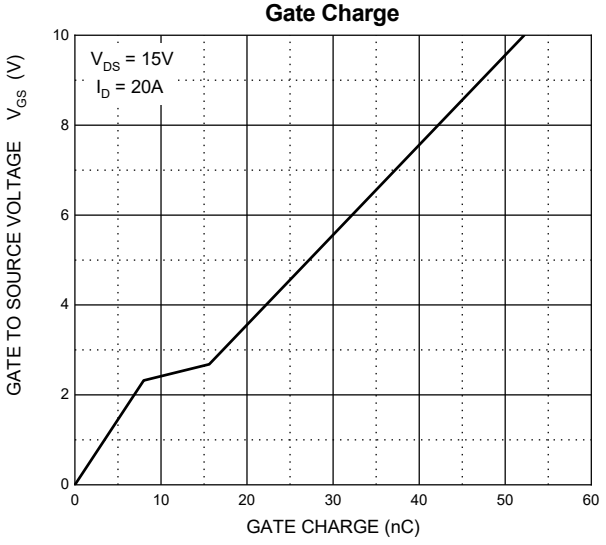


Typical Characteristics

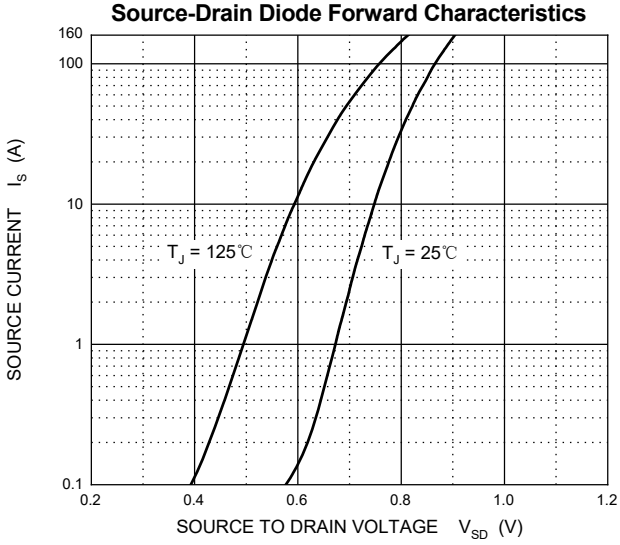
Typical Capacitances



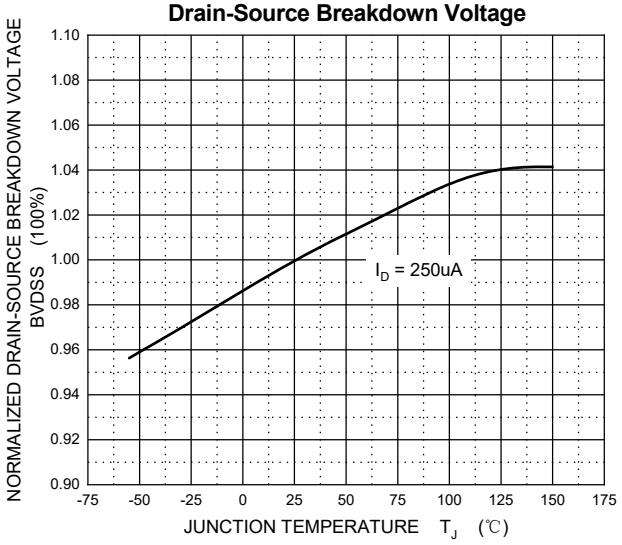
Gate Charge



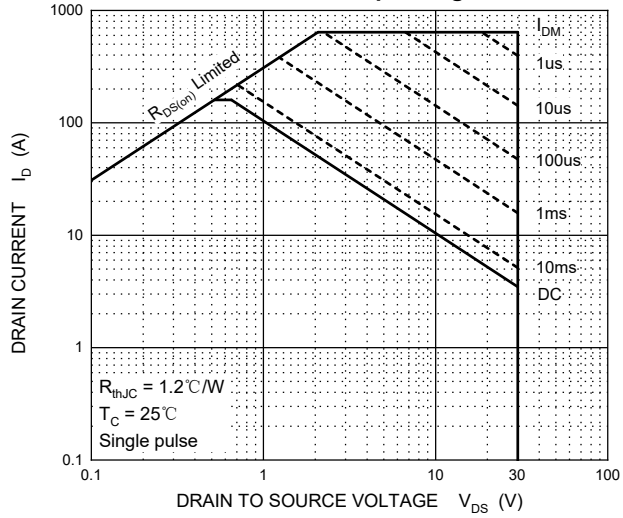
Source-Drain Diode Forward Characteristics



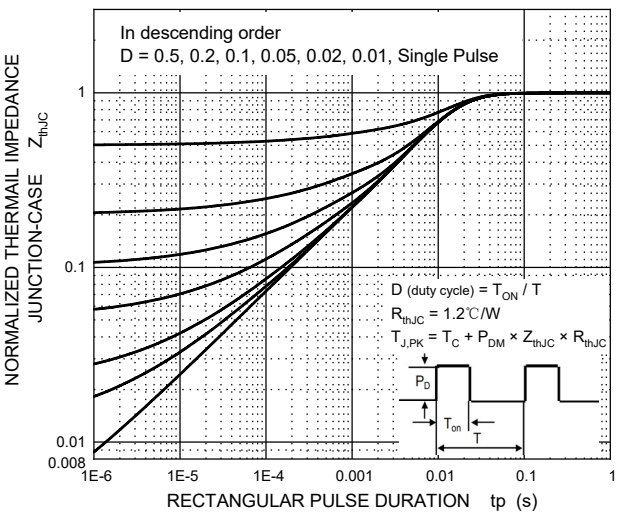
Drain-Source Breakdown Voltage



Maximum Safe Operating Area

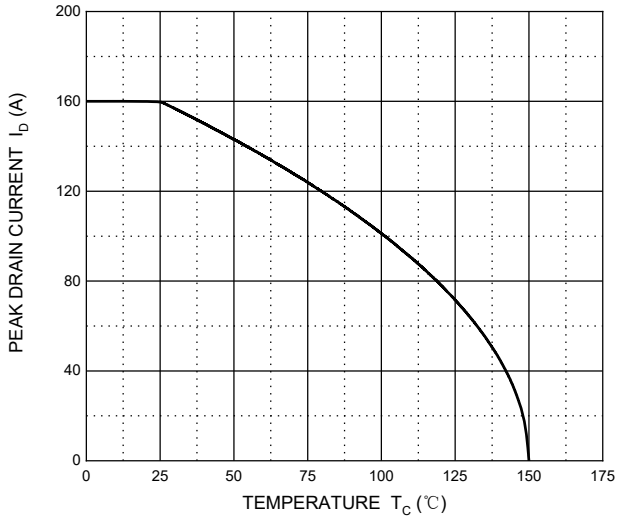


Transient Thermal Impedance, Junction-Case

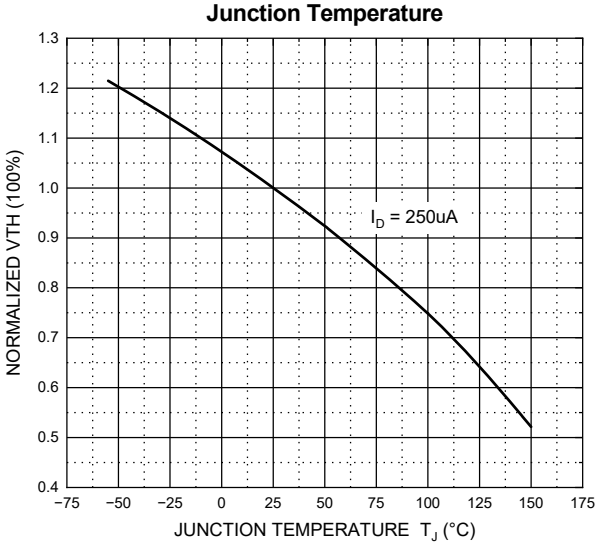


Typical Characteristics

ID vs. TC

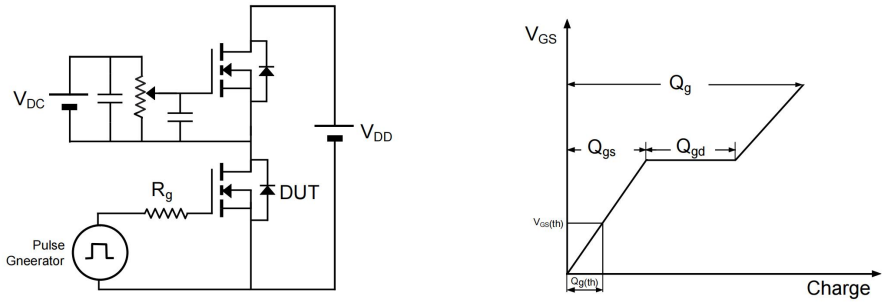


Normalized Threshold Voltage vs. Junction Temperature

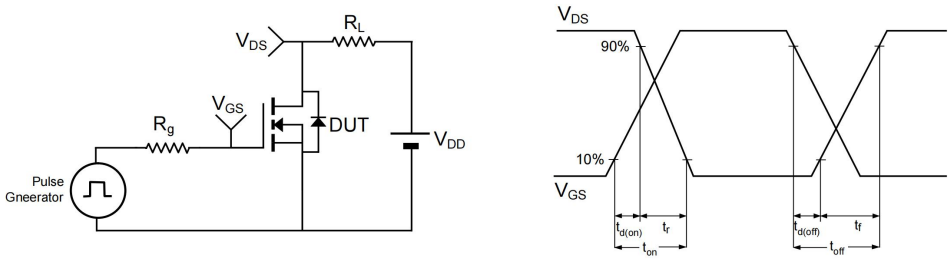


Test Circuit And Waveforms

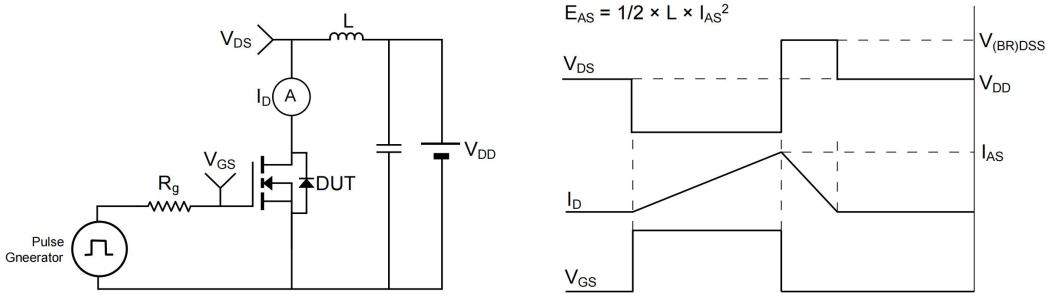
Gate Charge



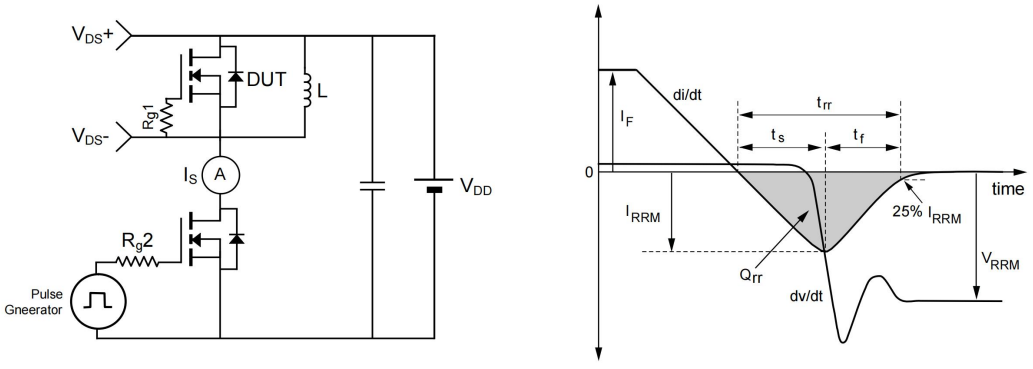
Resistive Load Switching Time



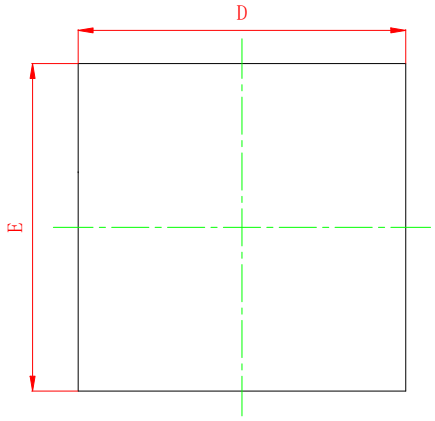
Un-clamped Inductive Load Switching



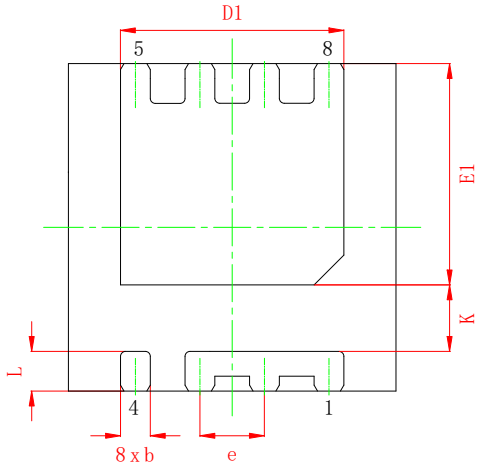
Drain-Source Body Diode Reverse Recovery



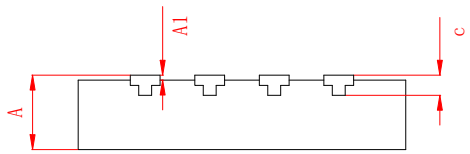
DFN3.3x3.3A1-8L PACKAGE OUTLINE DIMENSIONS



TOP VIEW
[顶视图]



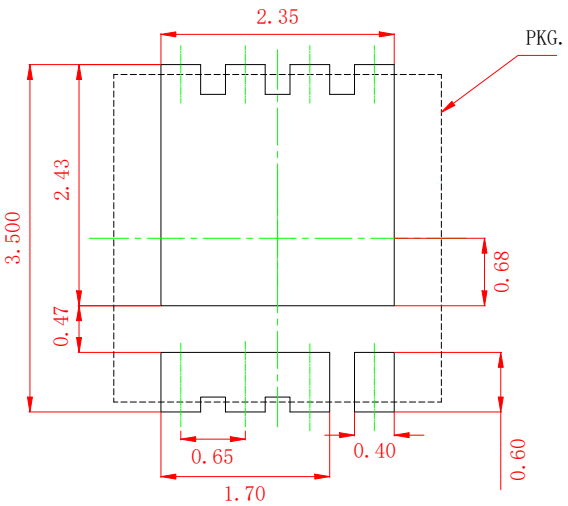
BOTTOM VIEW
[背视图]



SIDE VIEW
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
c	0.20 REF.		0.008 REF.	
b	0.25	0.35	0.010	0.014
D	3.25	3.35	0.128	0.132
D1	2.15	2.35	0.085	0.093
E	3.25	3.35	0.128	0.132
E1	2.13	2.33	0.084	0.092
e	0.65 BSC.		0.026 BSC.	
K	0.67 REF.		0.026 REF.	
L	0.35	0.45	0.014	0.018

DFN3.3x3.3A1-8L Suggested Pad Layout

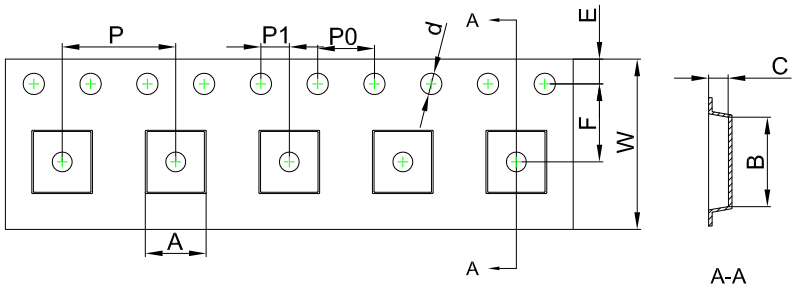


Notes:
1 Controlling dimension: in millimeters.
2 General tolerance: ±0.05mm.
3 The pad layout is for referance purpose only.

NOTICE

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

DFN3.3x3.3A1-8L Embossed Carrier Tape

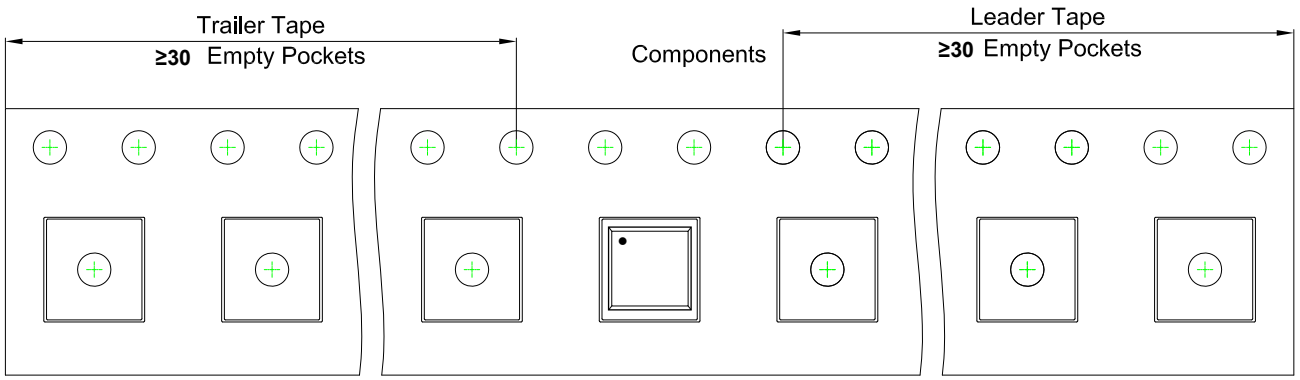


Packaging Description:

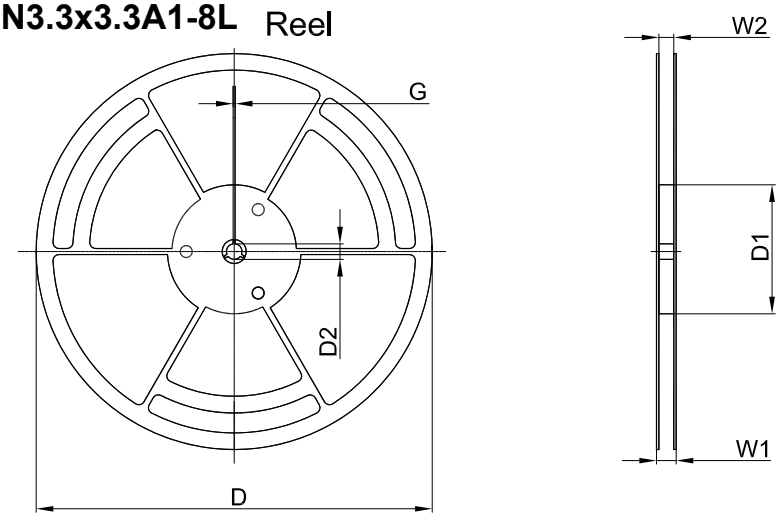
DFN3.3×3.3A1-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 5,000 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	A	B	C	d	E	F	P0	P	P1	W
DFN3.3×3.3A1-8L	3.55	3.55	1.1	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

DFN3.3x3.3A1-8L Tape Leader and Trailer



DFN3.3x3.3A1-8L Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	G	W1	W2
13"Dia	Ø330.00	100.00	13.00	1.90	17.60	12.40

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
5,000 pcs	13 inch	10,000 pcs	360×360×65	50,000 pcs	378×358×382