NextGen Components,Inc.

PART CODE: SOT23BSS84S0PD

SPECIFICATION SHEET

SPECIFICATION SHEET NO.	N0909- SOT23BSS84S0PD
DATE	Sept. 09, 2021
REVISION	A1
DESCRIPITION	SMD Plastic-Encapsulate MOSFETS, SOT-23 series, 3 pads BSS84 Type, -50V P-Channel MOSFET Continuous Drain Current: -130mA, Maximum Power Dissipation: 225mW Operating Temp. Range -50°C ~+150°C, Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant
CUSTOMER	
CUSTOMER PART NUMBER	
CROSS REF. PART NUMBER	
ORIGINAL PART NUMBER	MDD BSS84
PART CODE	SOT23BSS84S0PD

VENDOR APPROVE
Issued/Checked/Approved   
DATE: Sept. 09, 2021

CUSTOMER APPROVE
DATE:

NextGen Components,Inc.

PART CODE: SOT23BSS84S0PD

SMD PLASTIC-ENCAPSULATE MOSFETS SOT-23 SERIES

MAIN FEATURE

- Energy Efficient
- Low Threshold Voltage
- High-speed Switching
- Miniature Surface Mount Package Saves Board Space

APPLICATION

- Load switching, power management in portable and battery−powered products such as computers, printers, cellular and cordless telephones.
- DC/DC Converter

RFQ
Request For Quotation

PART CODE GUIDE

SOT23	BSS84	S	0PD
1	2	3	4

1) **SOT23:** SMD Plastic-Encapsulate MOSFETS, SOT-23 series, 3 pads

2) **BSS84**: Type code for Original part number BSS84

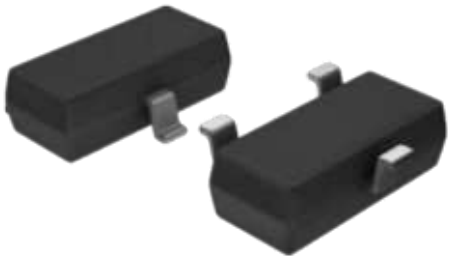
3) **S**: Package code, Package in Tape/Reel, 3000pcs/Reel

4) **0PD:** Marking code for “PD” on the case surface, Different Marking for different specification.

SMD PLASTIC-ENCAPSULATE MOSFETS SOT-23 SERIES

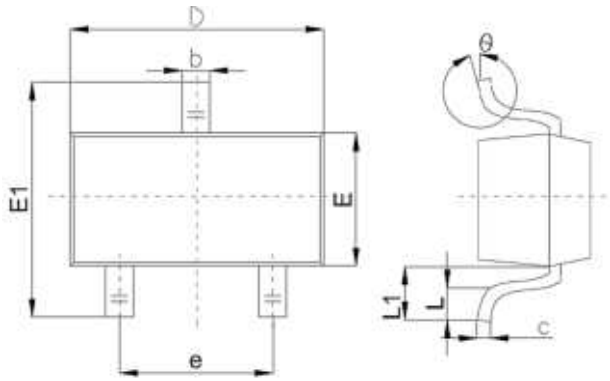
DIMENSION (Unit: Inch/mm)

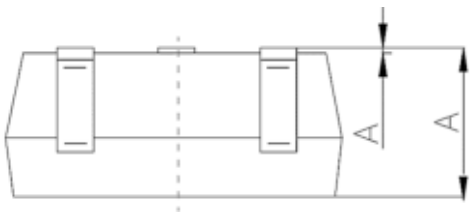
Image for reference



Marking: PD

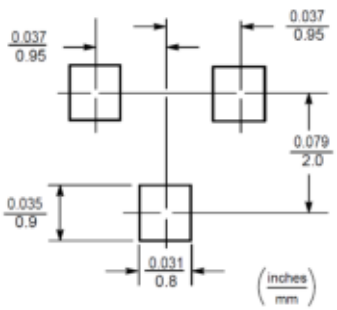
SOT-23

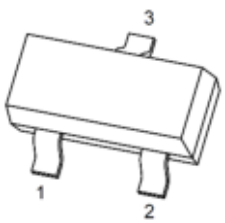




Symbol	Value (mm)		
	Min.	Typ.	Max.
A	1.0		1.4
A1			0.10
b	0.35		0.50
c	0.10		0.20
D	2.70	2.90	3.10
E	1.40		1.60
E1	2.40		2.80
e		1.9	
L	0.10		0.30
L1	0.40		
θ	0°		10°

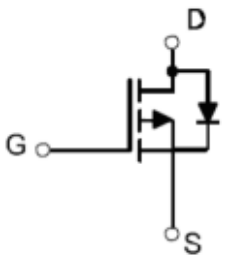
Recommend Pad Layout
(Tol.: +/-0.05mm)





1. Gate
2. Source
3. Drain

Equivalent Circuit Diagram



SMD PLASTIC-ENCAPSULATE MOSFETS SOT-23 SERIES

-50V P-CHANNEL MODE MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$ Typical	I_D MAX
-50V	8Ω@-10V	-130 mA
	10Ω@-5V	-130 mA

MECHANICAL DATA

V(BR)DSS	Terminals	Polarity	Mounting Position	Weight per piece
JEDEC SOT-23 molded plastic body	Matte tin plated	Polarity symbol marking on case	Any	0.00019 Ounce, 0.00591 grams

MAX. RATINGS & THERMAL CHARACTERISTICS AT Ta=25 °C (unless otherwise specified)

Parameter	SYMBOLS	VALUE	UNITS
		LIMIT	
Drain-Source Voltage	V_{DS}	-50	V
Gate-Source Voltage	V_{GS}	+/-20	V
Continuous Drain Current	I_D	-0.13	A
Pulsed Drain Current (See Note 1) @tp <10 µs	I_{DM}	-0.52	A
Power Dissipation	P_D	225	mW
Junction-to-Ambient Thermal Resistance (see Note 2)	$R_{\Theta JA}$	556	°C/W
Junction Temperature	T_J	+150	°C
Storage Temperature Range	T_{STG}	-50 ~ +150	°C
Lead Temperature for Soldering Purposes Duration for 5 Seconds	T_L	+260	°C

Notes

1) Repeat rating : Pulse width limited by junction temperature.

2) Surface Mounted on FR4 Board, t ≤10 sec.

MOSFET STATIC CHARACTERISTICS AT Ta=25 °C (unless otherwise specified)

Parameter	SYMBOLS	VALUE			UNIT	Condition
		Min.	Typ.	Max.		
Drain-source Breakdown Voltage	$V_{(BR)DSS}$	-50			V	V_{GS}=0V I_D= -250μA
Zero Gate Voltage Drain Current	I_{DSS})			-15	μA	V_{DS}=-50V, V_{GS}=0V
				-0.1		V_{DS}=-25V, V_{GS}=0V
Gate-body Leakage Current	I_{GSS}			+/-5.0	μA	V_{GS}=+/-20V, V_{DS}=0V
Gate threshold voltage (note 1)	$V_{GS(th)}$	-0.9	-1.6	-2.0	V	V_{GS}= V_{DS}, ID-250μA
Drain-source on-resistance (note 1)	$R_{DS(on)}$		5.8	10	Ω	V_{GS}=-5V, I_D=-0.1A
			4.5	8		V_{GS}=-10V, I_D=-0.1A
Forward transconductance (see Note 2)	g_{FS}	50			mS	V_{DS}=-25V, I_D=-100mA

DYNAMIC ELECTRICAL CHARACTERISTICS (See Note 2)

Parameter	SYMBOLS	VALUE			UNIT	Condition
		Min.	Typ.	Max.		
Input Capacitance	C_{iss}		30		pF	V_{DS}= 5V V_{GS}=0V f =1MHz
Output Capacitance	C_{oss}		10			
Reverse Transfer Capacitance	C_{rss}		5			

SWITCHING CHARACTERISTIS

Parameter	SYMBOLS	VALUE			UNIT	Condition
		Min.	Typ.	Max.		
Turn on Delay Time	$t_{d(on)}$		2.5		ns	V_{DD}=-15V I_D=2.5A R_L = 50Ω
Turn on Rise Time	t_r		1			
Turn Off Delay Time	$t_{d(off)}$		16			
Turn Off Fall Time	t_f		8			

SOURCE DRAIN DIODE CHERACTERISTIC

Parameter	SYMBOLS	VALUE			UNIT	Condition
		Min.	Typ.	Max.		
Continuous current	I_S			-0.13	A	T_C= 25 °C
Pulsed Current	I_{SM}			-0.52	A	
Diode forward voltage (See note 1)	V_{SD}		-0.85	-2.2	V	I_S= 0.13A V_{GS} =0V

Note:

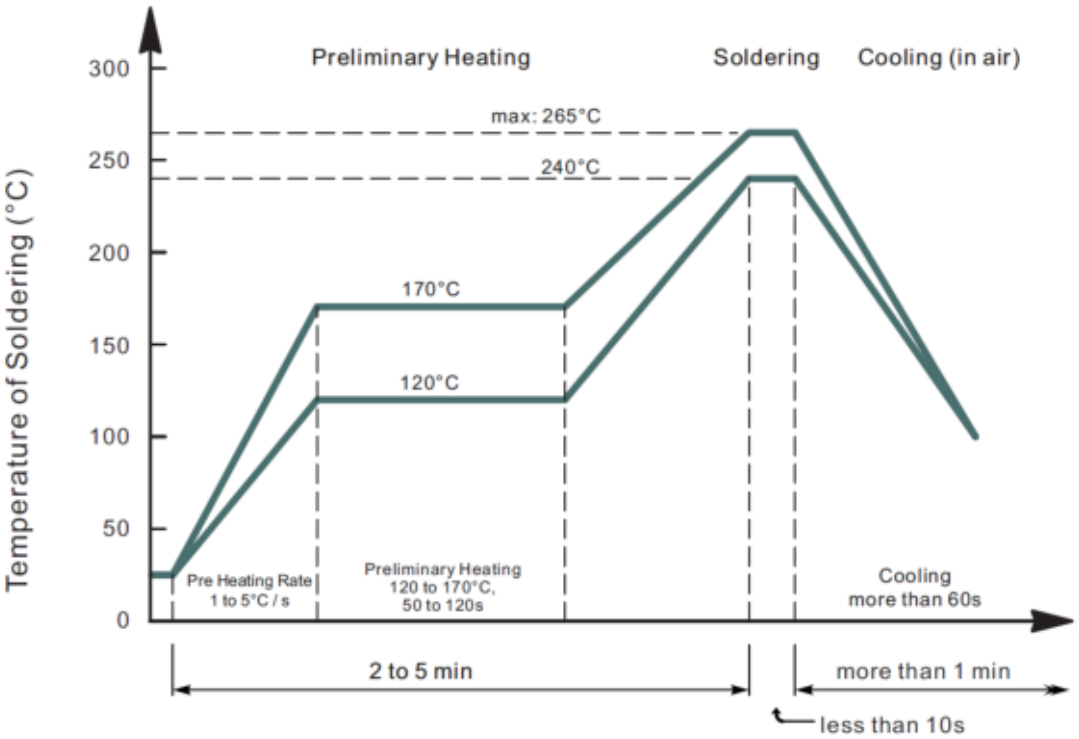
1) Pulse test: pulse width ≤ 300μs, duty cycle≤ 2%

2) Repeat rating : Pulse width limited by junction temperature.

RELIABILITY

Number	Experiment Items	Experiment Method And Conditions	Reference Documents
1	Solder Resistance Test	Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031.2
2	Solderability Test	230°C ±5°C for 5 sec.	MIL-STD-750D METHOD-2026.1 0
3	Pull Test	1 kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036.4
4	Bend Test	0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times	MIL-STD-750D METHOD-2036.4
5	High Temperature Reverse Bias Test	T_A=100°C for 1000 Hours at V_R=80% Rated V_R	MIL-STD-750D METHOD-1038.4
6	Forward Operation Life Test	TA=25°C Rated Average Rectified Current	MIL-STD-750D METHOD-1027.3
7	Intermittent Operation Life Test	On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles.	MIL-STD-750D METHOD-1036.3
8	Pressure Cooker Test	15 PSIG, T_A=121°C, 4 hours	MIL-S-19500 APPENOIXC
9	Temperature Cycling Test	-55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles.	MIL-STD-750D METHOD-1051.7
10	Thermal Shock Test	0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles	MIL-STD-750D METHOD-1056.7
11	Forward Surge Test	8.3ms Single Sale Sine-wave One Surge.	MIL-STD-750D METHOD-4066.4
12	Humidity Test	T_A=65°C, RH=98% for 1000 hours.	MIL-STD-750D METHOD-1021.3
13	High Temperature Storage life Test	150°C for 1000 Hours	MIL-STD-750D METHOD-1031.5

SUGGESTED REFLOW PROFILE (For Reference Only)



- Recommended peak temperature is over 245℃, If peak temperature is below 245 ℃, you may adjust the following parameters; time length of peak temperature (longer), time length of soldering (longer), thickness of solder paste (thicker)
- Welding shall not exceed 2 times
- Remark: lead free solder paste (96.5 sn/3.0 Ag/0.5Cu)

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

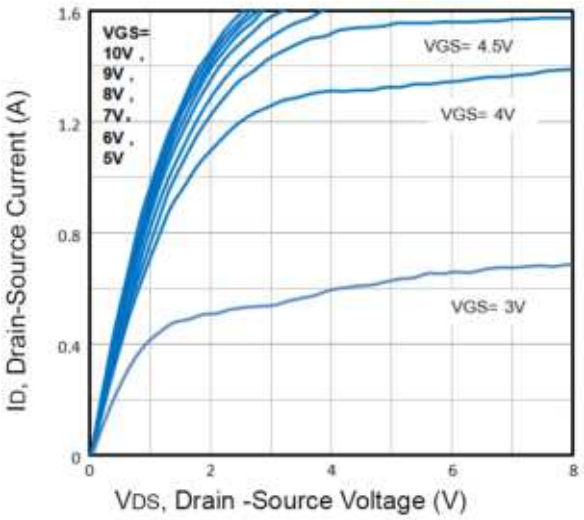


Fig1. Typical Output Characteristics

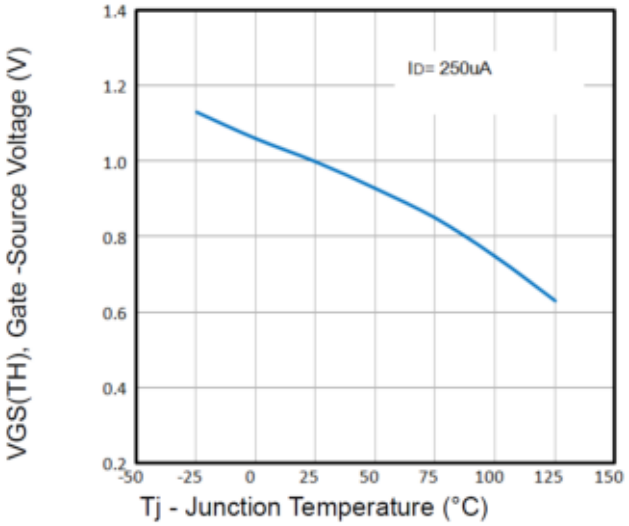


Fig2. Normalized Threshold Voltage Vs. Temperature

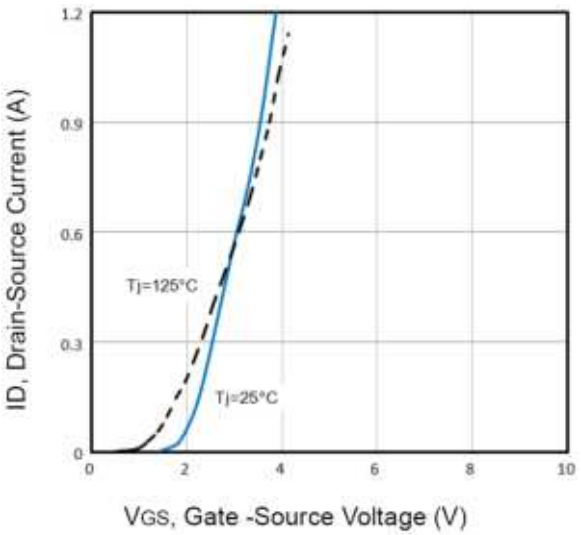


Fig3. Typical Transfer Characteristics

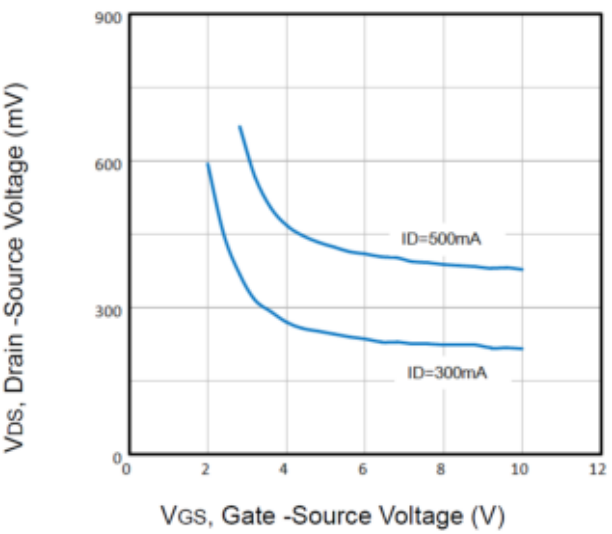


Fig4. Drain -Source Voltage vs Gate -Source Voltage

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

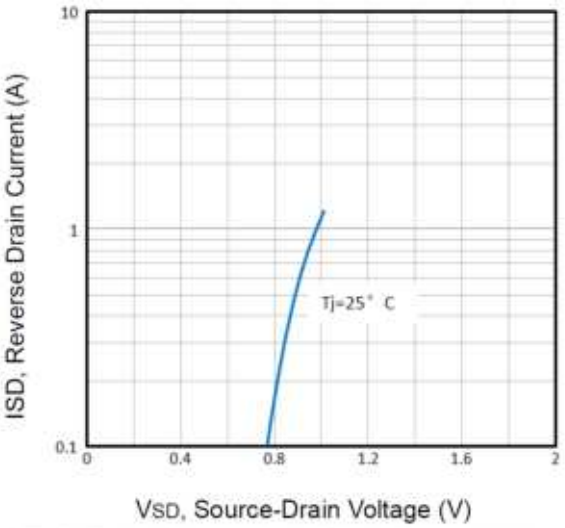


Fig5. Typical Source-Drain Diode Forward Voltage

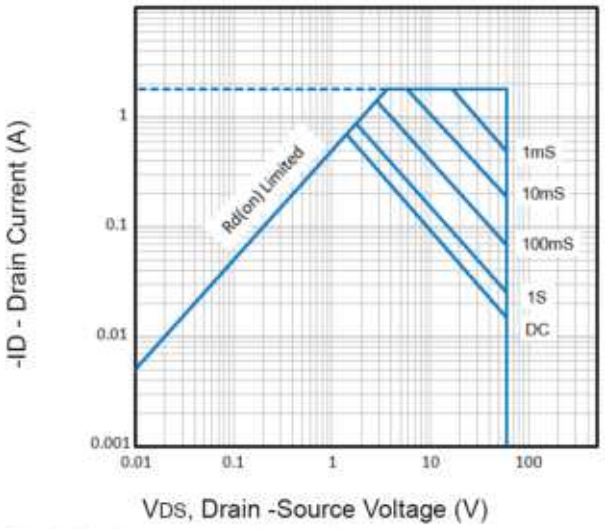


Fig6. Maximum Safe Operating Area

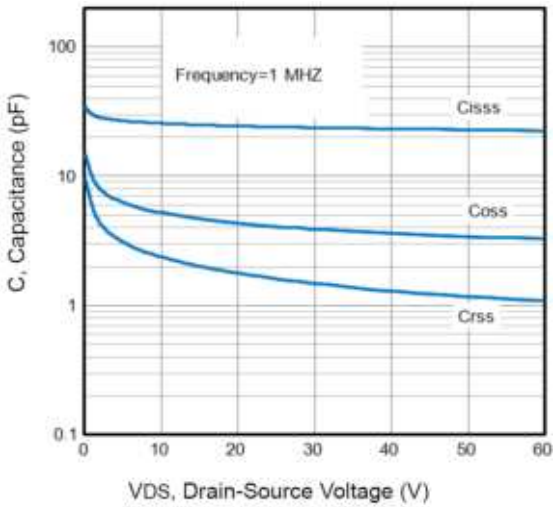


Fig7. Typical Capacitance Vs. Drain-Source Voltage

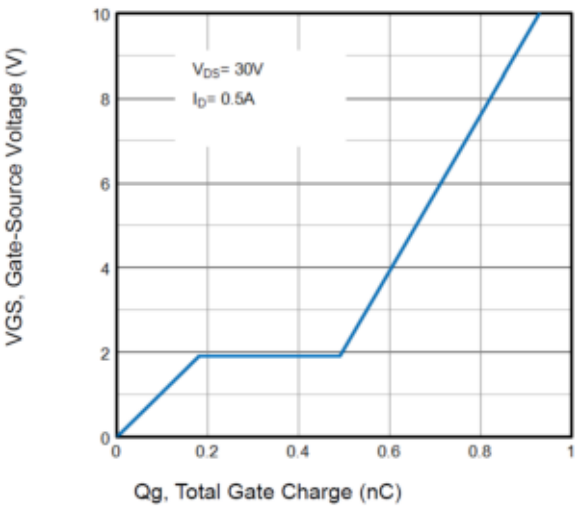


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)

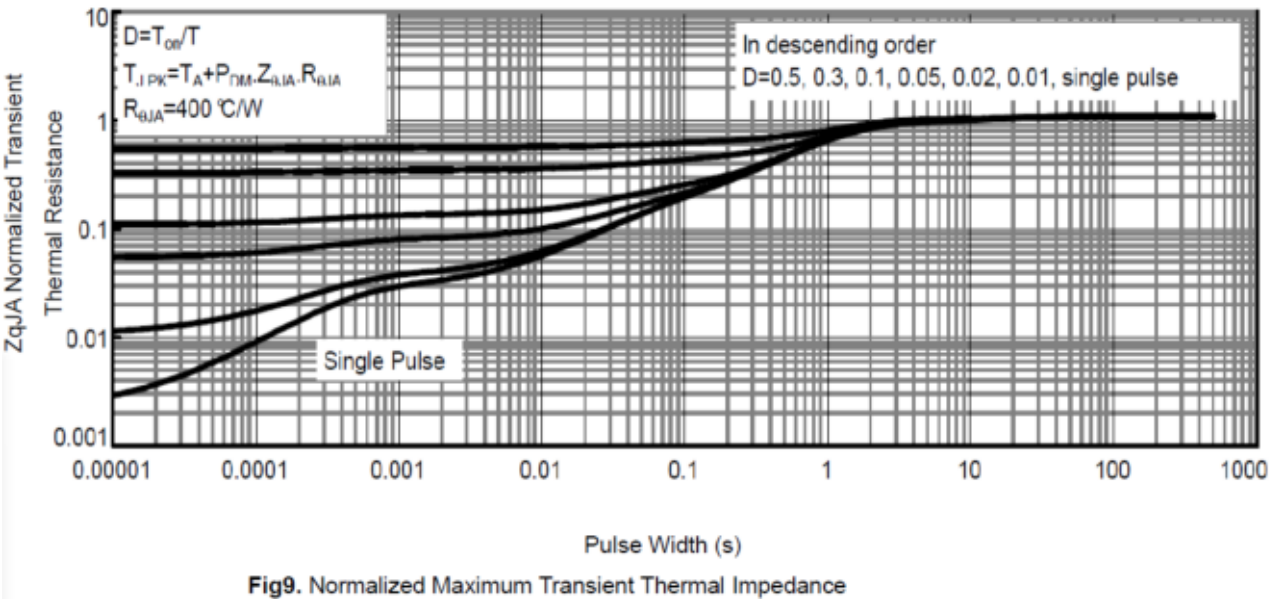


Fig9. Normalized Maximum Transient Thermal Impedance

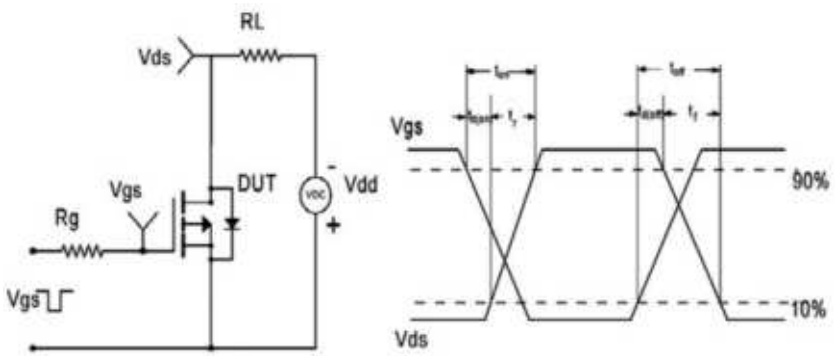
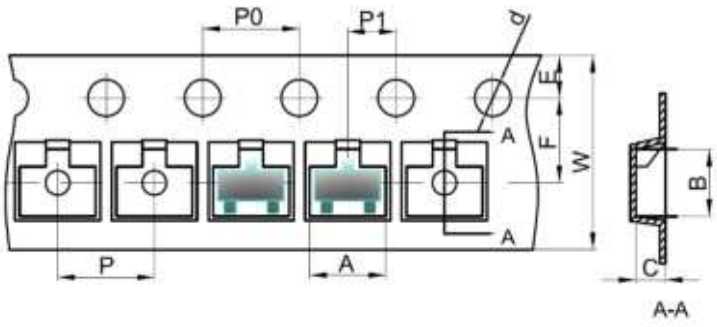
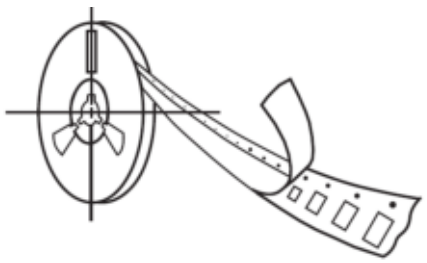


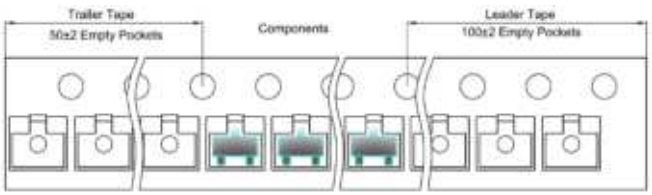
Fig10. Switching Time Test Circuit and waveforms

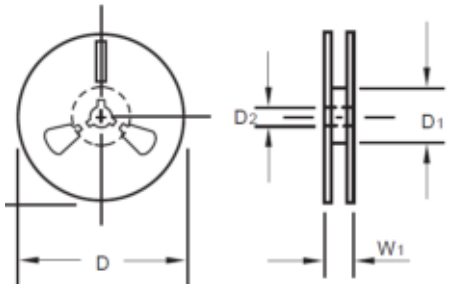
TAPE/REEL (Unit: mm)

All Devices are packed in accordance with EIA standard RS-481-A and specifications.





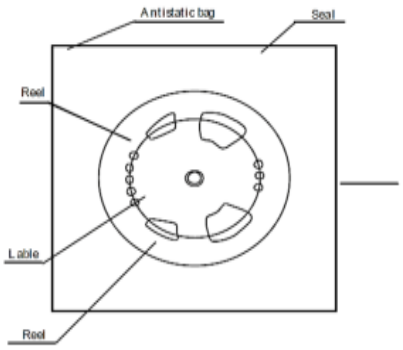


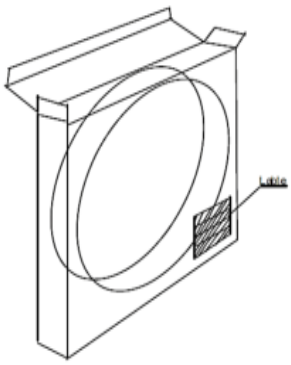


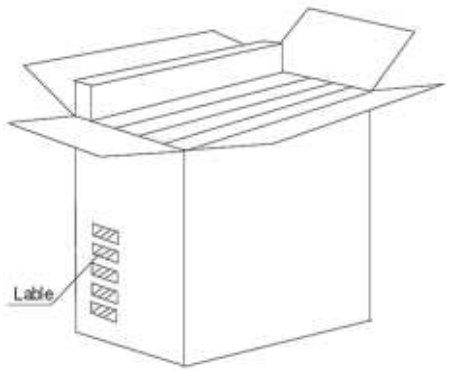
Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier Length	B	0.1	2.77
Carrier Depth	C	0.1	1.22
Sprocket hole	d	0.05	1.55
7”Reel outside diameter	D	2.0	178.00
7”Reel inner diameter	D1	Min.	54.4
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	8.00
Reel width	W1	1.0	19.50

PACKAGE

Case Code	Reel Size	MPQ (pcs)	Component Spacing (mm)	Qty. Per Box (pcs)	Inner Box L*W*H (mm)	Reel Size (mm)	Carton size L*W*H (mm)	Qty. Per Carton (pcs)	G. W (kg)
SOT-23	7”	3,000		45,000	212*207*207	178	430*430*230	180,000	6.5







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