

QSSI2337DS

P-Channel 80 V (D-S)

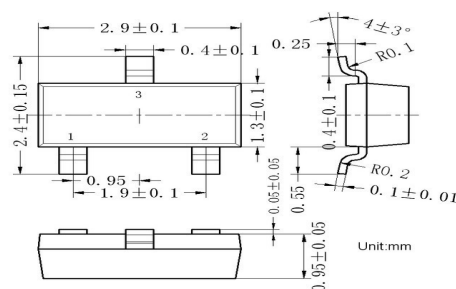
MOSFET



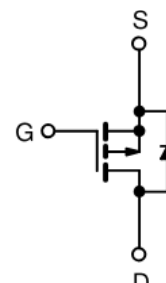
PRODUCT SUMMARY

VDS (V)	-80
RDS(on) max. () at VGS = -10 V	0.510
RDS(on) max. () at VGS = -6 V	0.620
Qg typ. (nC)	7
ID (A) a	-2.2
Configuration	Single

FEATURES



1. Gate
2. Source
3. Drain



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)

SYMBOL	PARAMETER	LIMIT	UNIT	
VDS	Drain-source voltage	-80	V	
VGS	Gate-source voltage	± 20		
ID	Continuous drain current I _D (T _J = 150 °C)	TC = 25 °C	-2.2	
		TC = 70 °C	-1.75	
		TA = 25 °C	-1.2 b, c	
		TA = 70 °C	-0.96 b, c	
IDM	Pulsed drain current	-7	A	
IS	Continuous source-drain diode current	TC = 25 °C		-2.1
		TA = 25 °C		-0.63 b, c
IAS	Avalanche current	L = 0.1 mH		11
EAS	Single-pulse avalanche energy	6	mJ	
PD	Maximum power dissipation	TC = 25 °C	2.5	
		TC = 70 °C	1.6	
		TA = 25 °C	0.76b, c	
		TA = 70 °C	0.48b, c	
T _J , T _{stg}	Operating junction and storage temperature range	-55 to +150	°C	
	Soldering recommendations (peak temperature) d, e	260		

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THERMAL RESISTANCE RATINGS

SYMBOL	PARAMETER	TYPICAL	MAXIMUM	UNIT	
RthJA	Maximum junction-to-ambient b, d	t 10 s	120	166	°C/W
RthJF	Maximum junction-to-foot (drain)	Steady state	40	50	

Notes

- Package limited
- Surface mounted on 1" x 1" FR4 board
- t = 10 s
- Maximum under steady state conditions is 166 °C/W

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)

SYMBOL	PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
VDS	Drain-source breakdown voltage	VGS = 0 V, ID = -250 µA	-80	-	-	V
°VDS/TJ	VDS temperature coefficient	ID = -250 µA	-	-35.8	-	mV/°C
°VGS(th)/TJ	VGS(th) temperature coefficient		-	5.45	-	
VGS(th)	Gate-source threshold voltage	VDS = VGS, ID = -250 µA	-1	-	-3	V
IGSS	Gate-source leakage	VDS = 0 V, VGS = ± 20 V	-	-	± 100	nA
IDSS	Zero gate voltage drain current	VDS = -80 V, VGS = 0 V	-	-	-1	µA
		VDS = -80 V, VGS = 0 V, TJ = 55 °C	-	-	-10	A
ID(on)	On-state drain current a	VDS = 5 V, VGS = -10 V	-7	-	-	
RDS(on)	Drain-source on-state resistance a	VGS = -10 V, ID = -1.2 A	-	0.410	0.510	
		VGS = -6 V, ID = -1.1 A	-	0.520	0.620	
gfs	Forward transconductance a	VDS = -15 V, ID = -1.2 A	-	4.3	-	S
Dynamic b						
Ciss	Input capacitance	VDS = -40 V, VGS = 0 V, f = 1 MHz	-	310	-	pF
Coss	Output capacitance		-	22	-	
Crss	Reverse transfer capacitance		-	3.1	-	
Qg	Total gate charge	VDS = -40 V, VGS = -10 V, ID = -1.2 A	-	11	16	nC
		VDS = -40 V, VGS = -6 V, ID = -1.2 A	-	1.2	8.0	
Qgs	Gate-source charge	VDS = -40 V, VGS = -6 V, ID = -1.2 A	-	2.1	-	
Qgd	Gate-drain charge	VDS = -40 V, VGS = -6 V, ID = -1.2 A	-	3.2	-	
Rg	Gate resistance	f = 1 MHz	-	4.8	-	

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td(on)	Turn-on delay time	VDD = -40 V, RL = 42 ID -0.96 A, VGEN = -10 V, Rg = 1	-	10	15	ns
tr	Rise time		-	15	23	
td(off)	Turn-off delay time		-	20	30	
tf	Fall time		-	15	23	
td(on)	Turn-on delay time	VDD = -40 V, RL = 42 ID -0.96 A, VGEN = -6 V, Rg = 1	-	15	23	
tr	Rise time		-	18	27	
td(off)	Turn-off delay time		-	20	30	
tf	Fall time		-	12	18	

Drain-Source Body Diode Characteristics

IS	Continuous source-drain diode current	TC = 25 °C	-	-	-2.1	A
ISM	Pulse diode forward current a		-	-	-7	
VSD	Body diode voltage	IS = 0.63 A	-	-0.8	-1.2	V
trr	Body diode reverse recovery time	IF = 0.63 A, di/dt = 100 A/μs, TJ = 25 °C	-	30	45	ns
Qrr	Body diode reverse recovery charge		-	45	70	nC
ta	Reverse recovery fall time		-	25	-	ns
tb	Reverse recovery rise time		-	5	-	

Notes

- Pulse test; pulse width 300 μs, duty cycle 2 %
- Guaranteed by design, not subject to production testing

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Typical Characteristics

Figure 1

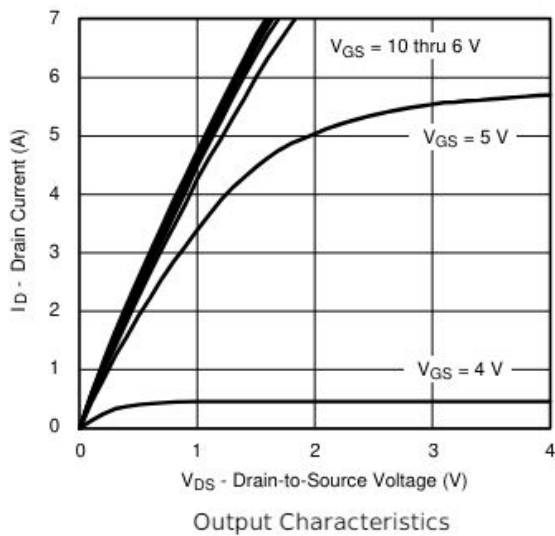


Figure 2

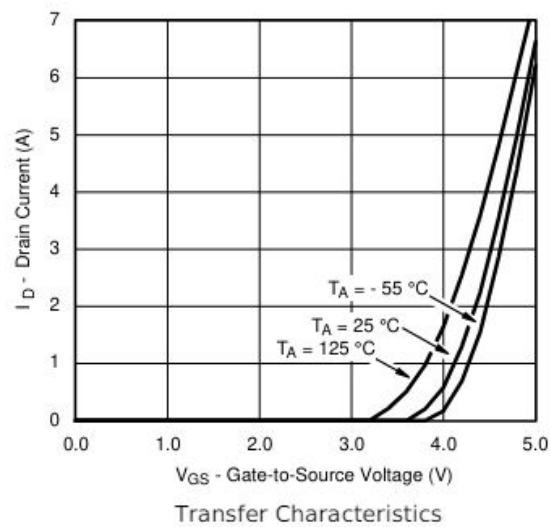


Figure 3

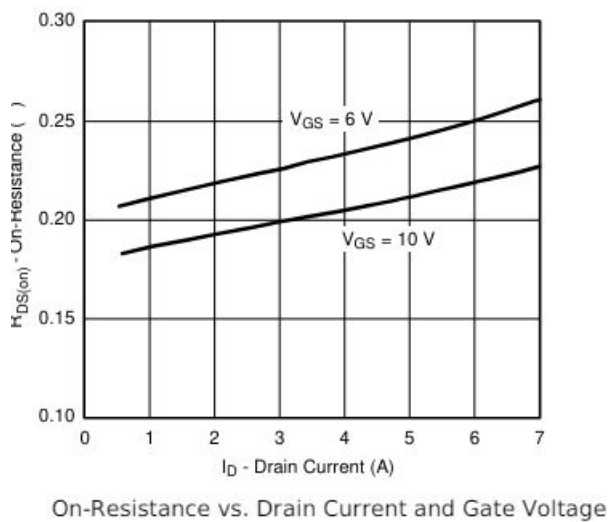
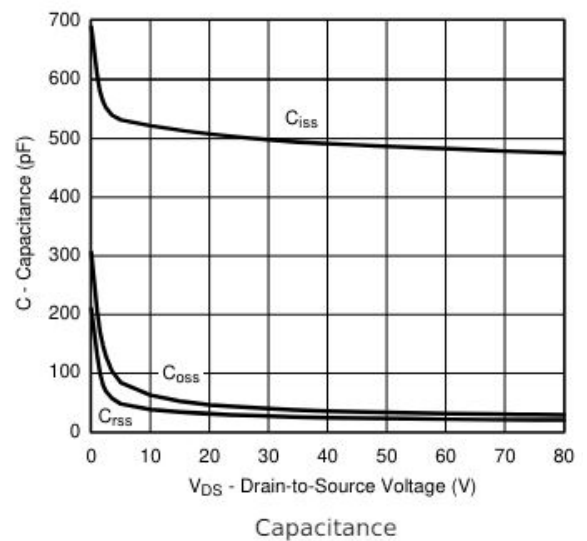


Figure 4



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Figure 5

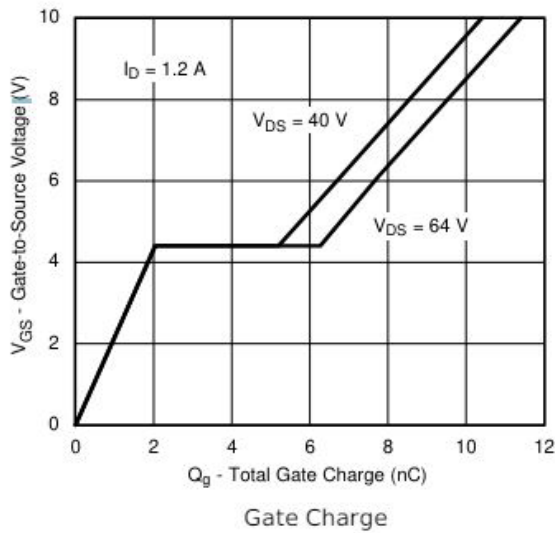


Figure 6

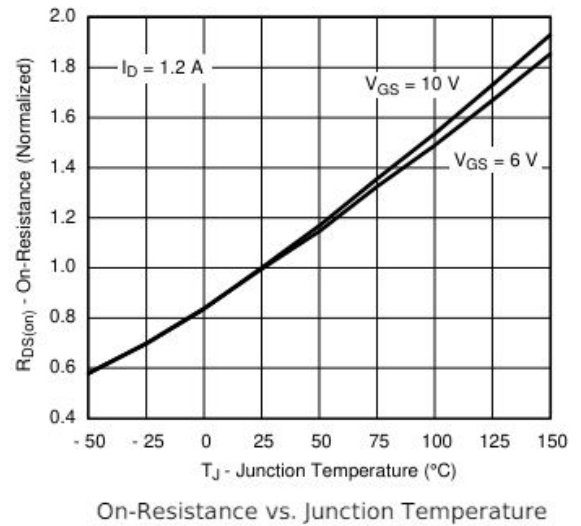


Figure 7

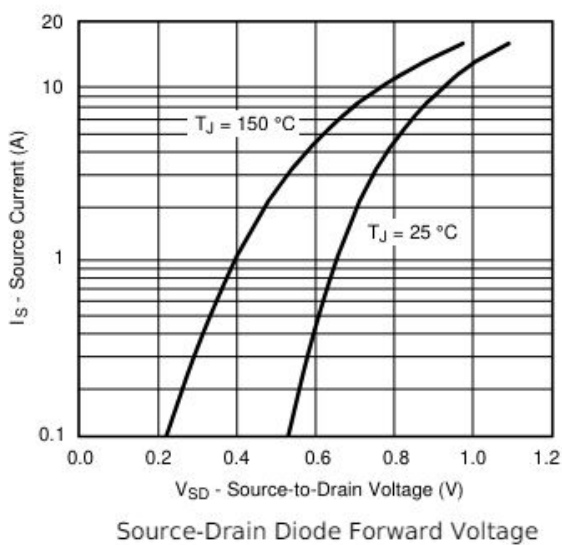
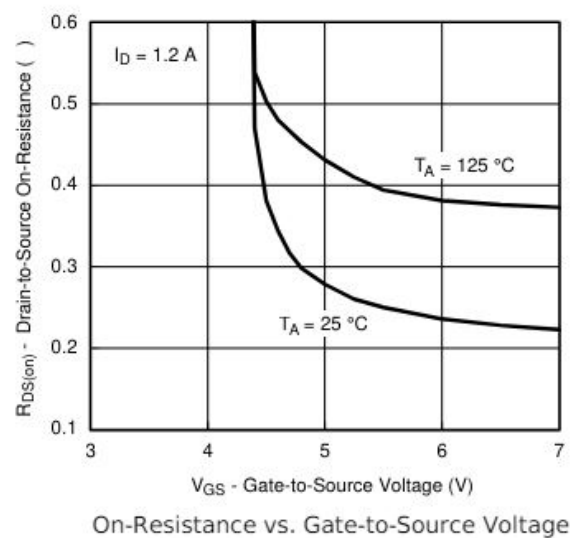


Figure 8



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Figure 9

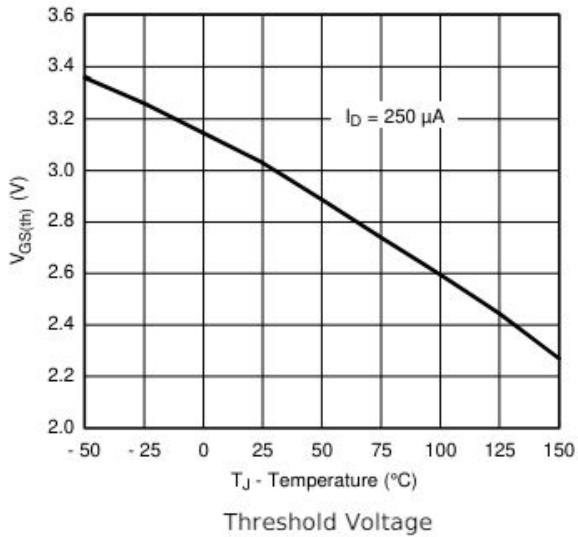


Figure 10

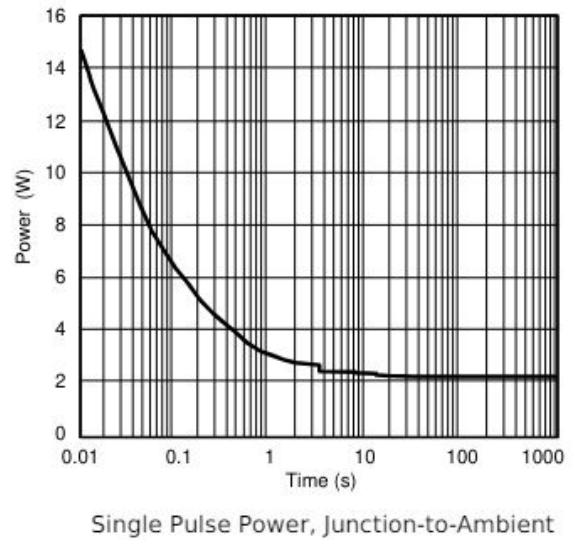


Figure 11

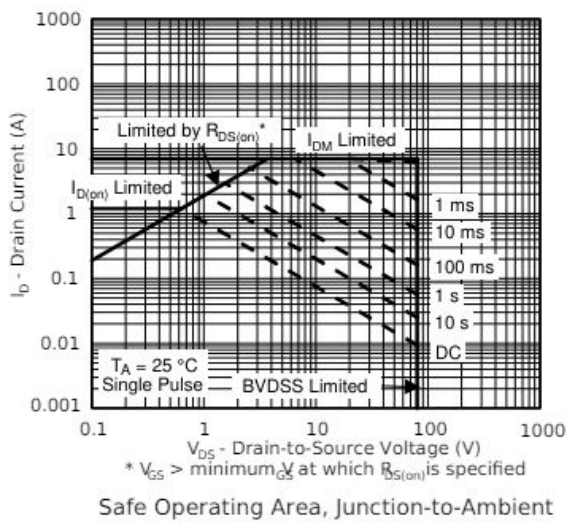
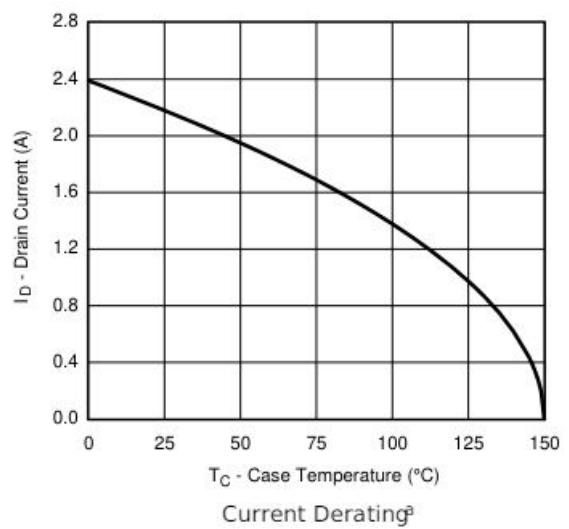


Figure 12



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Figure 13

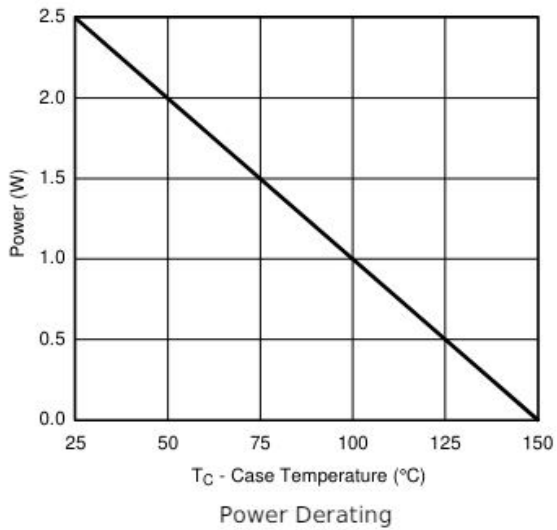
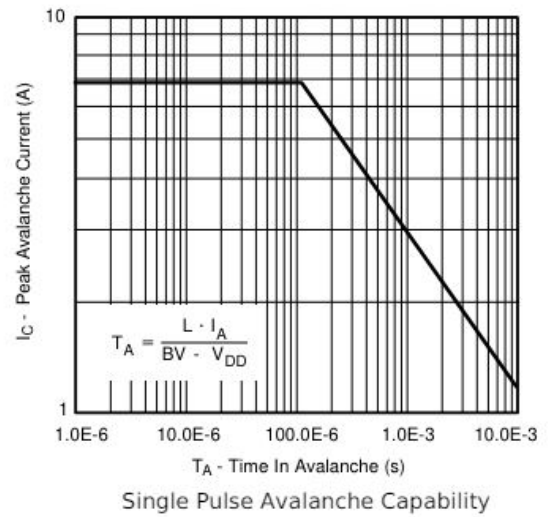


Figure 14



Typical Characteristics

Figure 1

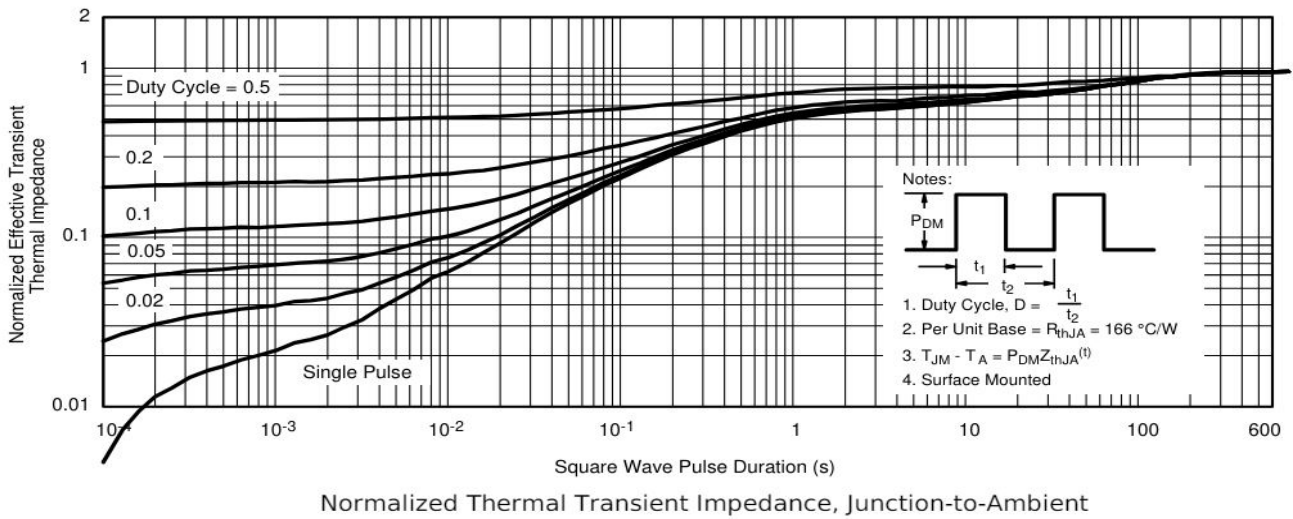
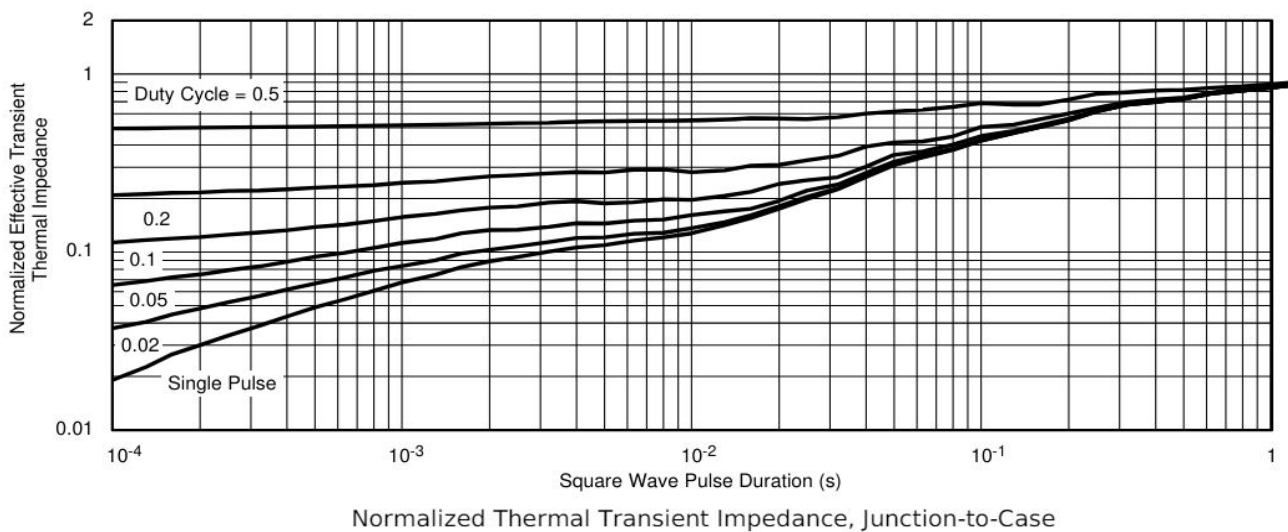


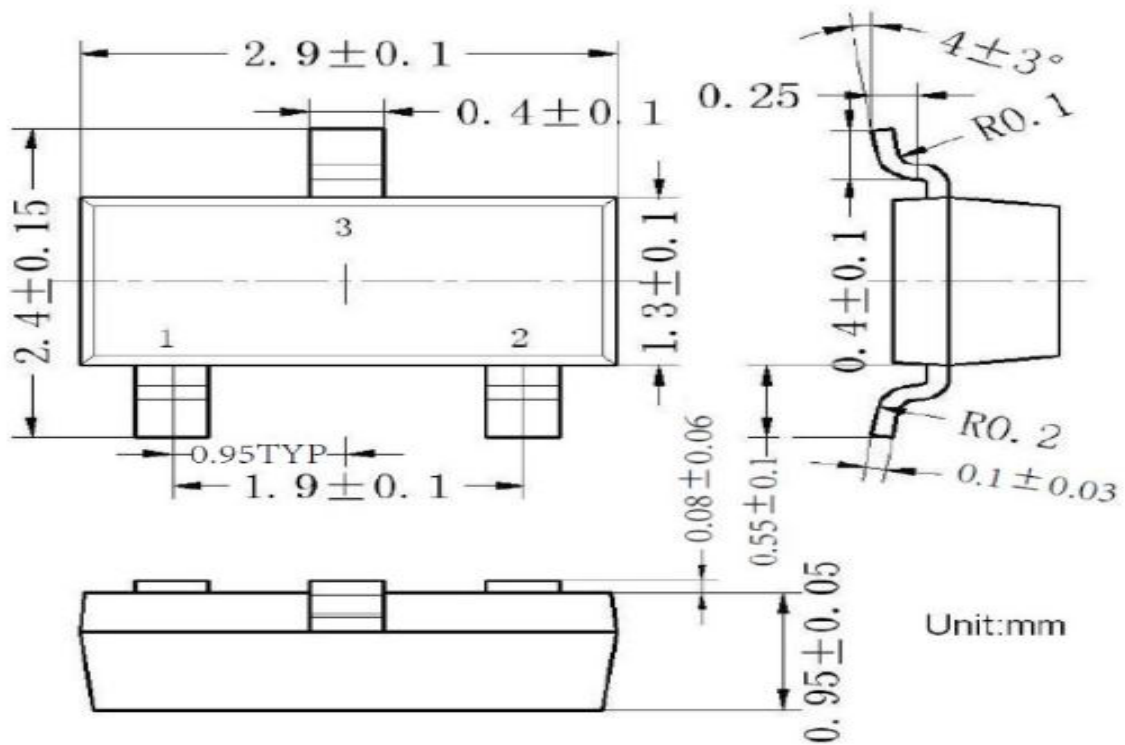
Figure 2



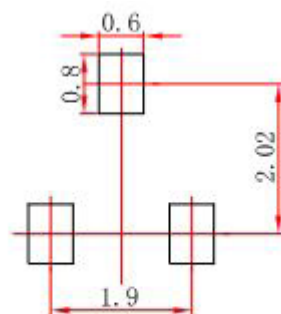
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SOT-23 Package Outline Dimensions



SOT-23 Suggested Pad Layout



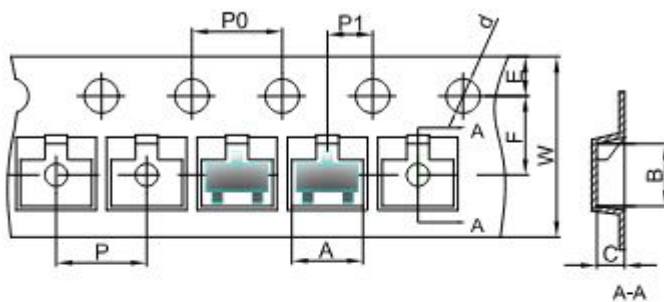
Note:
1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

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SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape



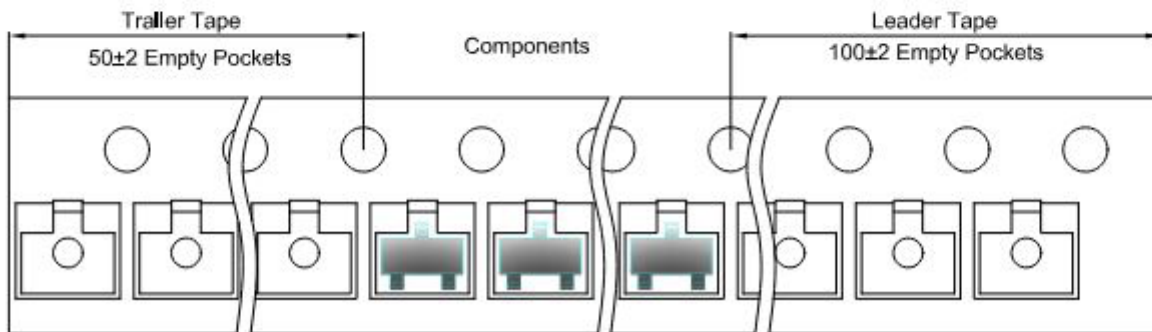
Packaging Description:

SOT-23 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 3,000 units per 7" or 17.8cm 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
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer

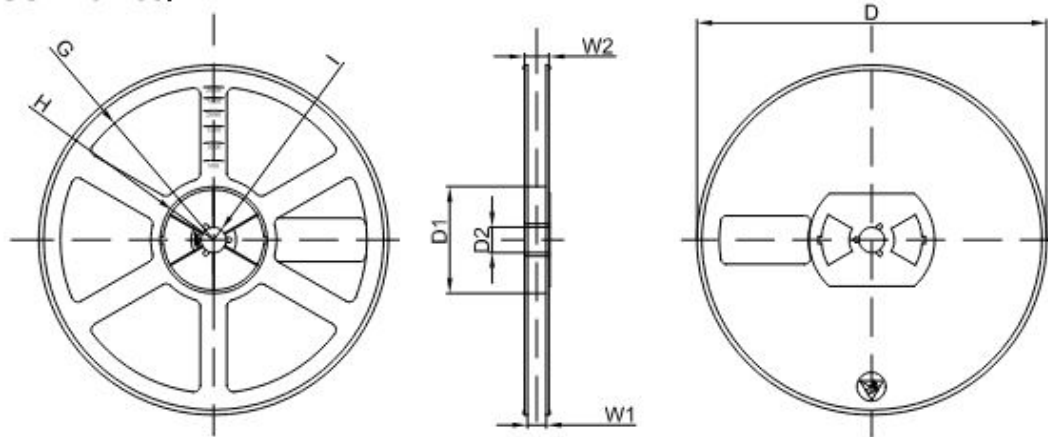


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SOT-23 Reel

SOT-23 Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 Inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

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Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min (Ts(min))	150°C
	Temperature Max (Ts(max))	200°C
	Time (min to max) (ts)	60 – 190 secs
Average ramp up rate (Liquidus Temp) (TL) to peak		5°C/second max
		5°C/second max
Reflow	Temperature (TL) (Liquidus)	217°C
	Temperature (tL)	60 – 150 seconds
		260+0/-5 °C
Time within actual peak Temperature (tp)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (TP)		8 minutes Max.
Do not exceed		280°C

