P-CHANNEL MOSFET

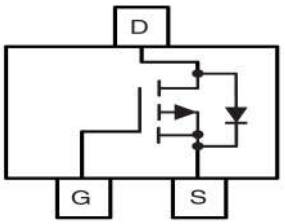
FEATURES

- Energy efficient
- Low threshold voltage
- High-speed switching

MECHANICAL DATA

- Case: SOT-23
- Case material: Molded plastic. UL flammability
- Classification rating: 94V-0
- Weight: 0.008 grams (approximate)
- Marking: PD

SOT-23



Equivalent circuit

MAXIMUM RATINGS (T_A= 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
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 @tp <10 μs (note 1)	I_{DM}	-0.52	A
Power dissipation	P_D	225	mW
Thermal resistance from junction to ambient (note 2)	$R_{\theta JA}$	556	°C/W
Junction temperature	T_J	+150	°C
Storage temperature	T_{STG}	-55~+150	°C

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ.	Max	Unit	Conditions
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	μA	V_{DS} =-25V,V_{GS} = 0V
Gate-body leakage current	I_{GSS}			±5	μA	V_{GS} =±20V, V_{DS} = 0V
Gate threshold voltage (note 3)	$V_{GS(th)}$	-0.9		-2	V	V_{DS} =V_{GS}, I_D =-250μA
Drain-source on-resistance (note 3)	$R_{DS(on)}$			10	Ω	V_{GS} =-5V, I_D =-0.1A
				8	Ω	V_{GS} =-10V, I_D =-0.1A
Forward transconductance (note 1)	g_{FS}	50			mS	V_{DS}=-25V; I_D=-100mA
Input capacitance	C_{iss}		30		pF	V_{DS}=5V,V_{GS} =0V,f =1MHz
Output capacitance	C_{oss}		10		pF	
Reverse transfer capacitance	C_{rss}		5		pF	
Turn-on delay time	$t_{d(on)}$		2.5		ns	V_{DD}=-15V,R_L=50Ω, I_D=-2.5A
Turn-on rise time	t_r		1		ns	
Turn-off delay time	$t_{d(off)}$		16		ns	
Turn-off fall time	t_f		8		ns	
Continuous current	I_S			-0.13	A	
Pulsed current	I_{SM}			-0.52	A	
Diode forward voltage (note 3)	V_{SD}			-2.2	V	I_S=-0.13A, V_{GS} = 0V

Notes : 1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t≤10s.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.

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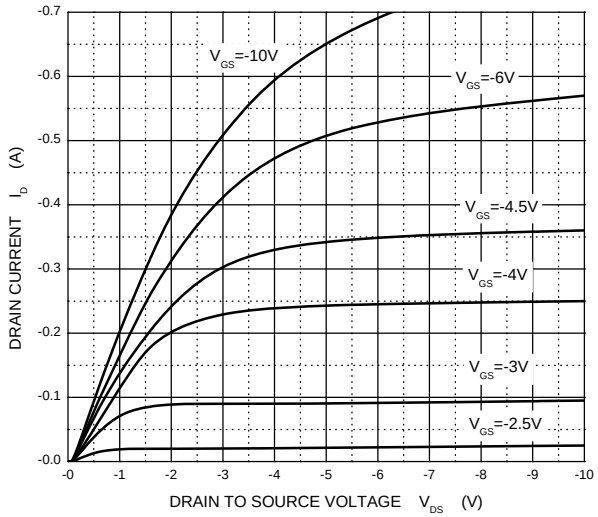
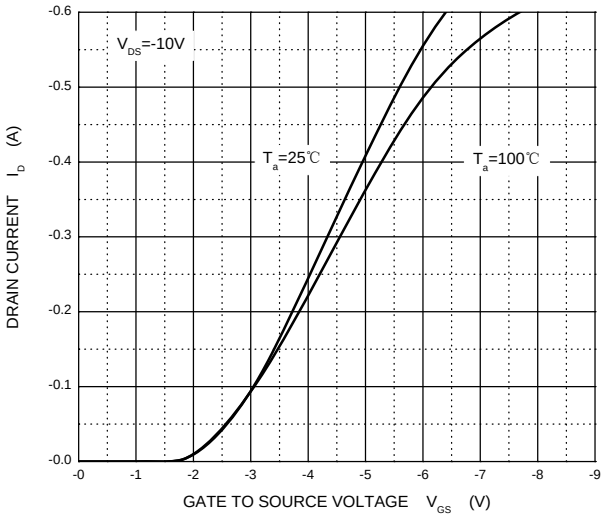
TYPICAL CHARACTERISTICS

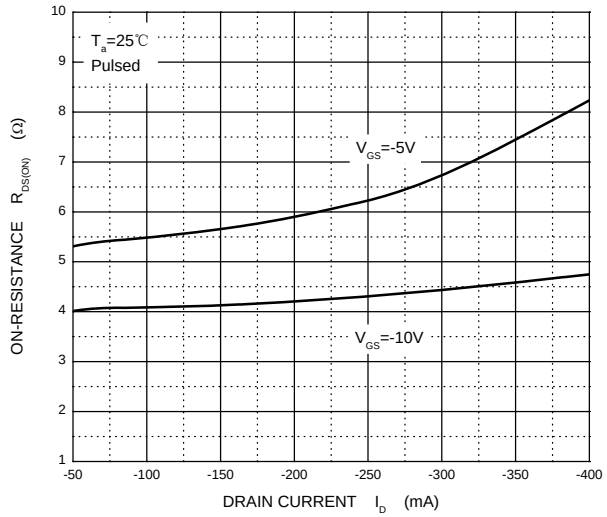
Output Characteristics



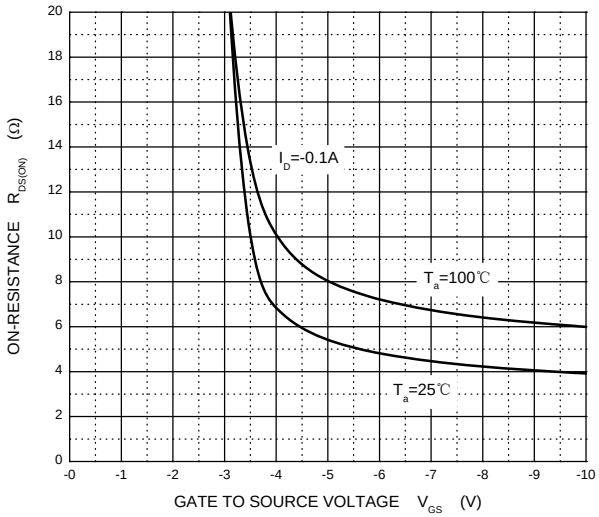
Transfer Characteristics



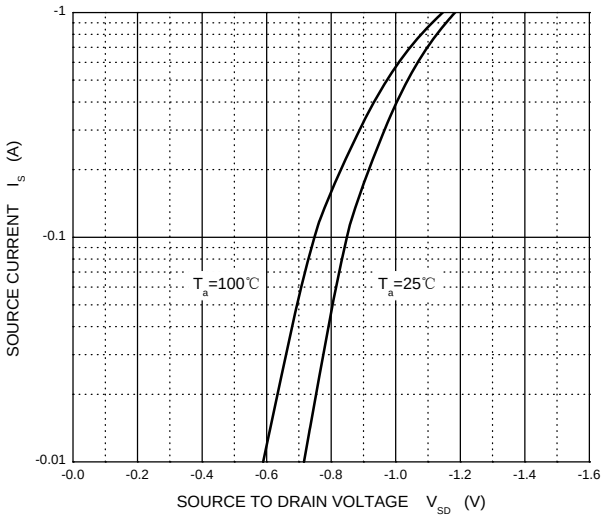
$R_{DS(ON)}$ —— I_D



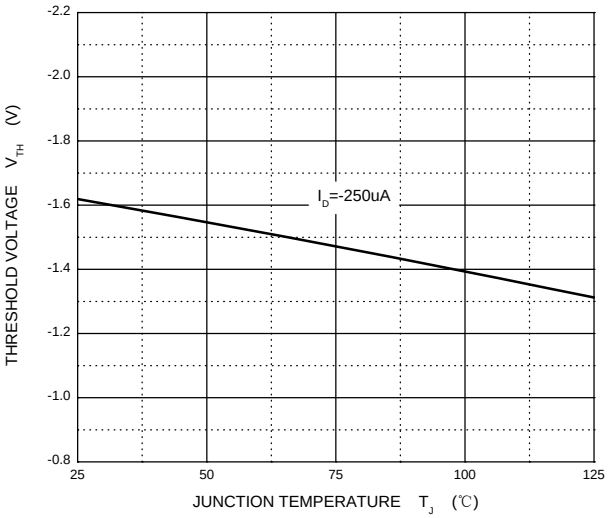
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}

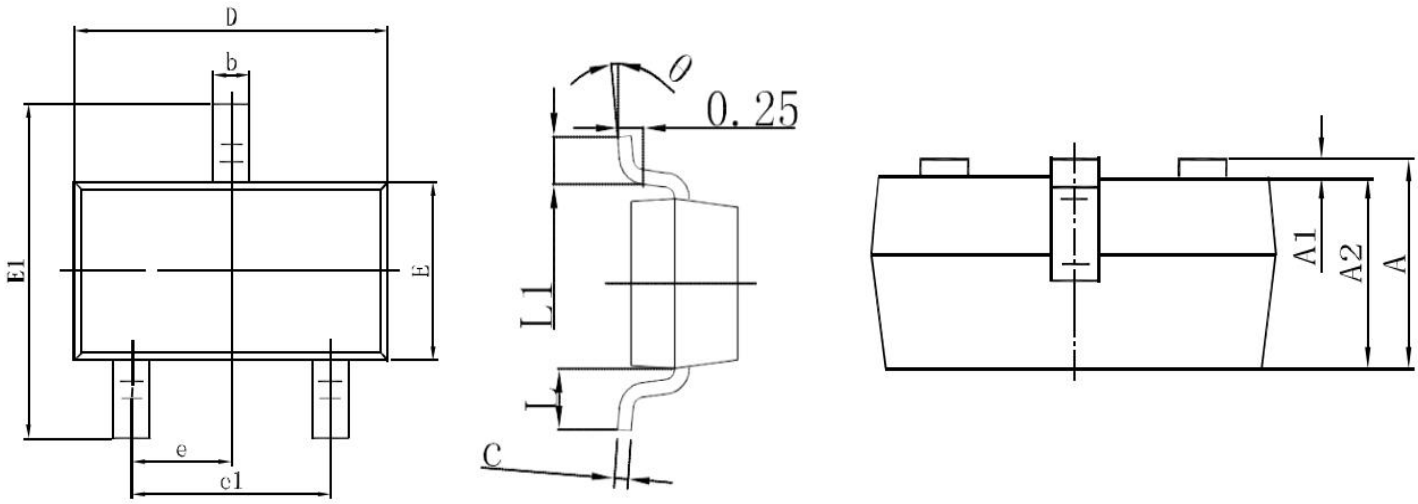


Threshold Voltage



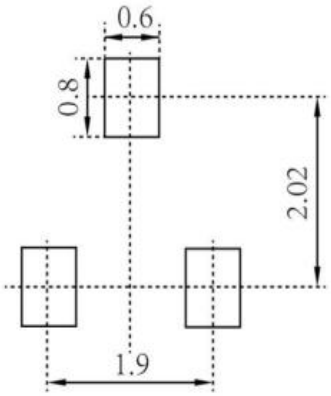
P-CHANNEL MOSFET

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.354	0.453
A1	0.000	0.100	0.000	0.039
A2	0.900	1.050	0.354	0.413
b	0.300	0.500	0.118	0.197
c	0.080	1.150	0.031	0.453
D	2.900	3.100	1.142	1.220
E	1.200	1.400	0.472	0.551
E1	2.250	2.550	0.886	1.004
e	0.95REF		0.374REF	
e1	1.800	2.000	0.709	0.787
L	0.55REF		0.215REF	
L1	0.300	0.500	0.118	0.197

SOT-23 Suggested Pad Layout



Note:

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

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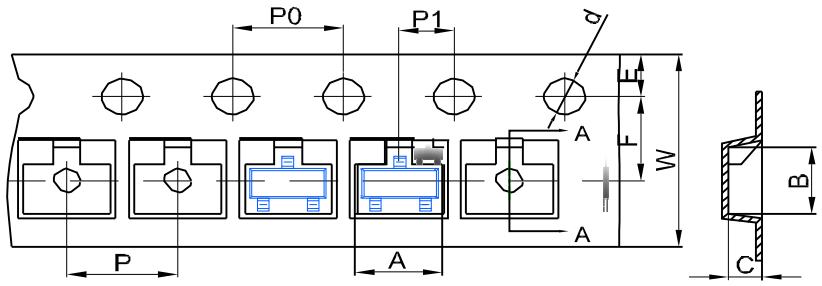
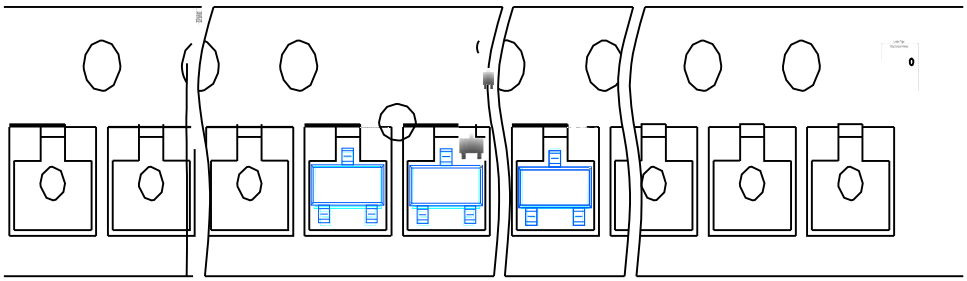
SOT-23 TAPE AND REEL

SOT-23 Embossed Carrier Tape

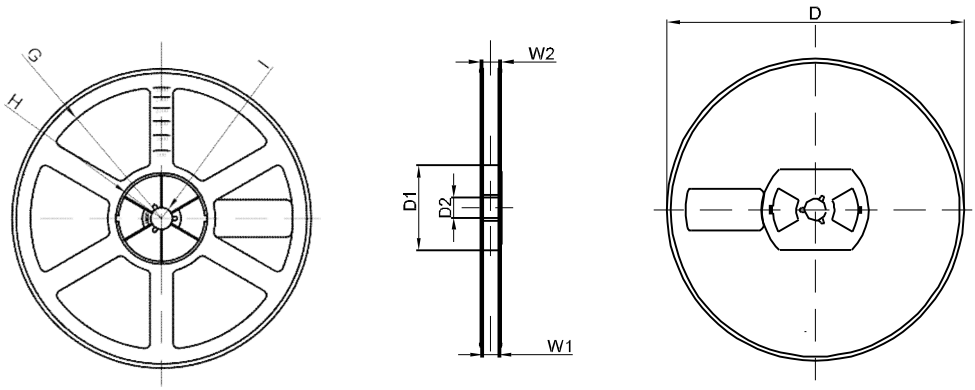


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-23 Tape Leader and Trailer

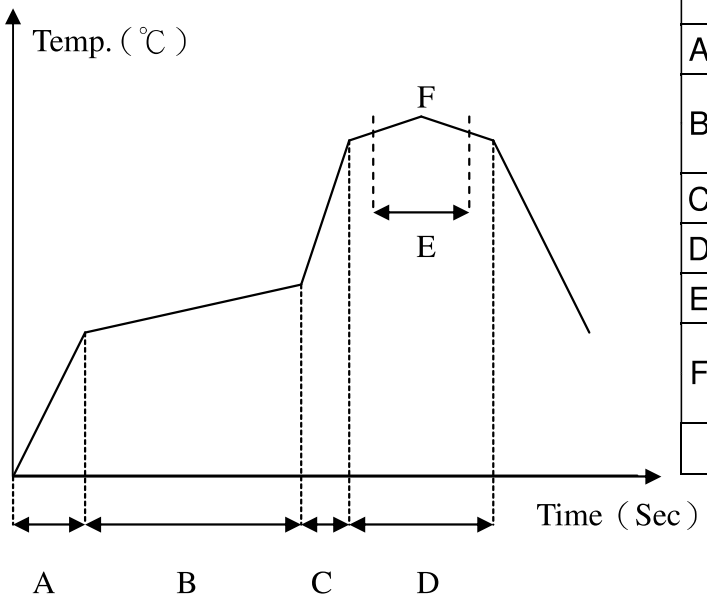


SOT-23 Reel



	DIMENSIONS ARE IN MILLIMETER							
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø178	54.40	13.00	R78	R25.60	R6.50	9.50	12.30
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1

1.Re-Flow Heat-resisting Temperature Condition



Profile Condition			Unit
A	Ramp Up	1~3	℃/Sec
B	Heat Time	60~180	Sec
	Heat Temp.	150~200	℃
C	Ramp Up	1~3	℃/Sec
D	Temp. Over 217℃	60~150	Sec
E	Temp. Over 245℃	20~40	Sec
F	Peak Temperature	260 ±5℃	℃
	Peak Hold Time	10	Sec
No of Time		3	Times

2.Dip Soldering

Flow soldering with bath

Flow soldering condition : 260 +5/-5℃ 10±0.5 Sec.

Times: 3 times

3.Hand Soldering

With soldering iron：380℃ 3±0.5 Sec

Times: 2 times