

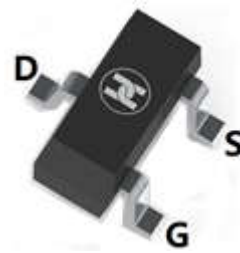
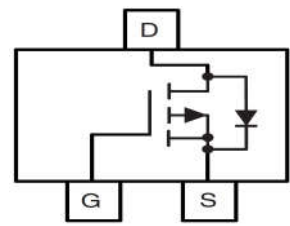
**P-CHANNEL MOSFET**
**FEATURES**

- 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: B84


**SOT-23**

**Equivalent circuit**
**MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	-50	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current	$I_D$	-0.13	A
Pulsed drain current @ $t_p < 10 \mu\text{s}$ (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	$^\circ\text{C/W}$
Junction temperature	$T_J$	+150	$^\circ\text{C}$
Storage temperature	$T_{STG}$	-55~+150	$^\circ\text{C}$

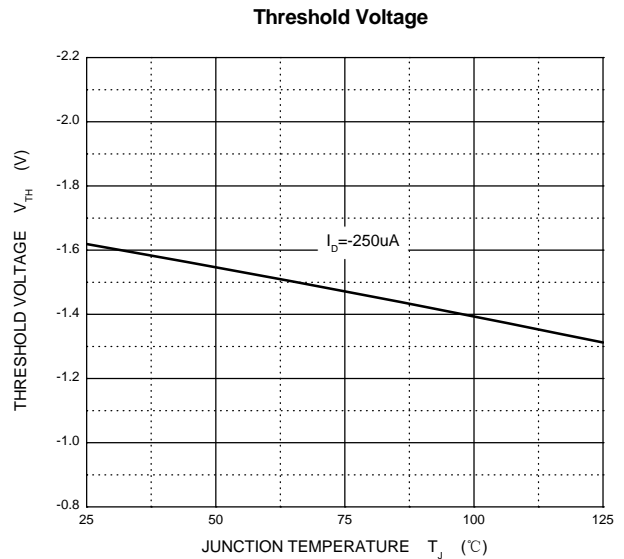
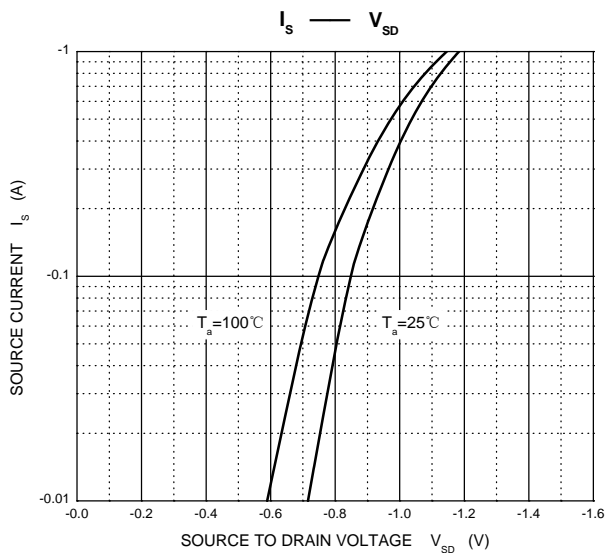
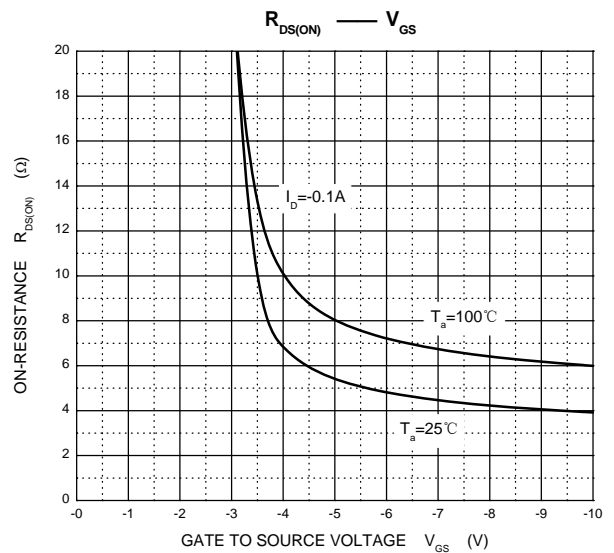
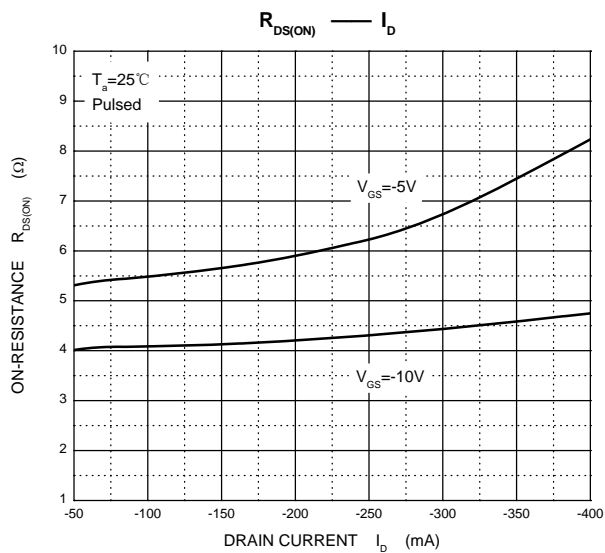
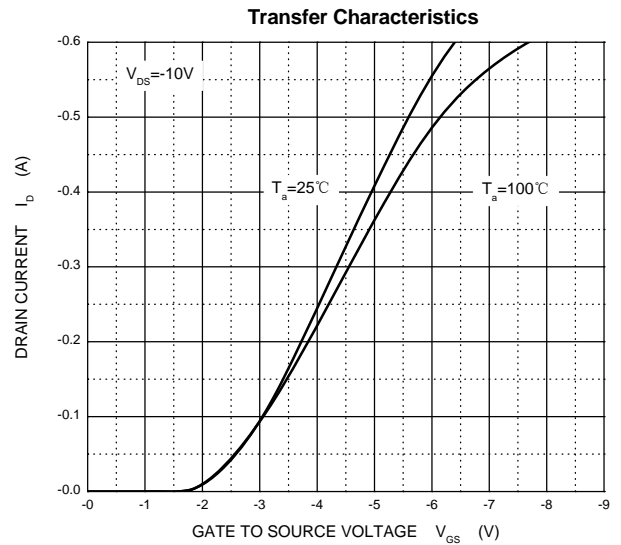
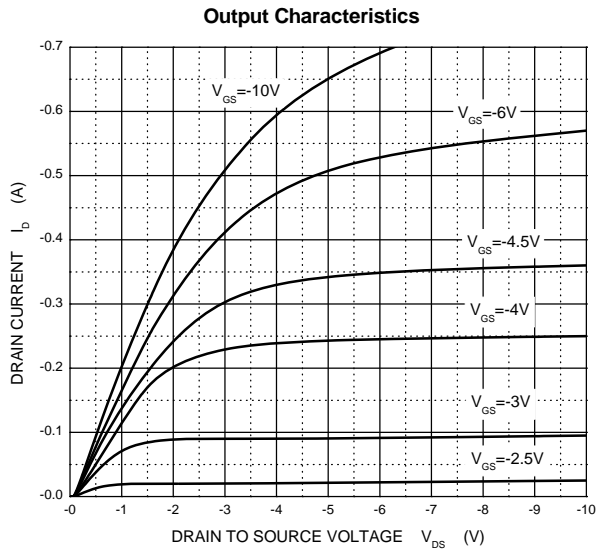
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min	Typ.	Max	Unit	Conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	-50			V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero gate voltage drain current	$I_{DSS}$			-15	$\mu\text{A}$	$V_{DS} = -50\text{V}, V_{GS} = 0\text{V}$
				-0.1	$\mu\text{A}$	$V_{DS} = -25\text{V}, V_{GS} = 0\text{V}$
Gate-body leakage current	$I_{GSS}$			$\pm 5$	$\mu\text{A}$	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
Gate threshold voltage (note 3)	$V_{GS(th)}$	-0.9		-2	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Drain-source on-resistance (note 3)	$R_{DS(on)}$			10	$\Omega$	$V_{GS} = -5\text{V}, I_D = -0.1\text{A}$
				8	$\Omega$	$V_{GS} = -10\text{V}, I_D = -0.1\text{A}$
Forward transconductance (note 1)	$g_{FS}$	50			mS	$V_{DS} = -25\text{V}; I_D = -100\text{mA}$
Input capacitance	$C_{iss}$		30		pF	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Output capacitance	$C_{oss}$		10		pF	
Reverse transfer capacitance	$C_{rss}$		5		pF	
Turn-on delay time	$t_{d(on)}$		2.5		ns	$V_{DD} = -15\text{V}, R_L = 50\Omega, I_D = -2.5\text{A}$
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	$I_S = -0.13\text{A}, V_{GS} = 0\text{V}$

- Notes : 1. Repetitive rating : Pulse width limited by junction temperature.  
 2. Surface mounted on FR4 board ,  $t \leq 10\text{s}$ .  
 3. Pulse Test : Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycles  $\leq 2\%$ .

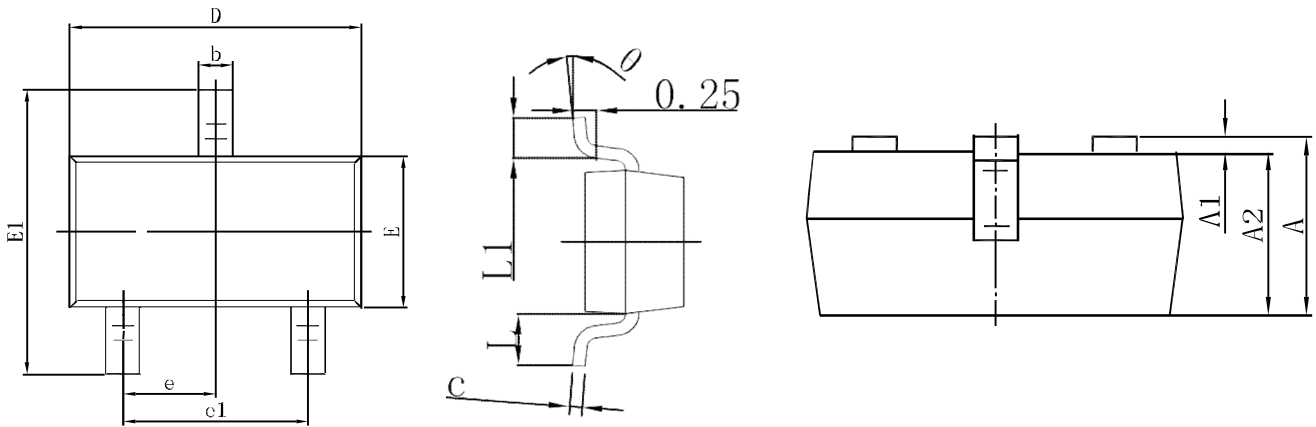
P-CHANNEL MOSFET

TYPICAL CHARACTERISTICS



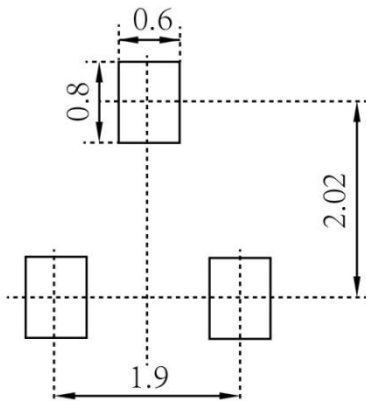
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**SOT-23 PACKAGE OUTLINE DIMENSIONS**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

**SOT-23 SUGGESTED PAD LAYOUT**



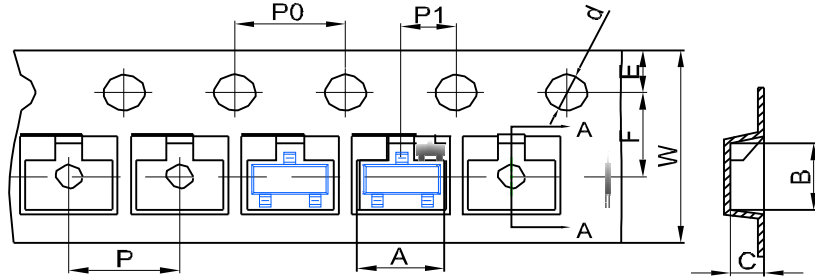
**Note:**

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

P-CHANNEL MOSFET

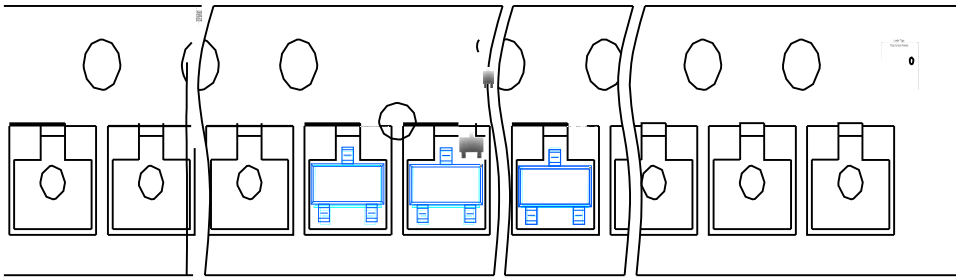
**SOT-23 TAPE AND REEL**

**SOT-23 Embossed Carrier Tape**

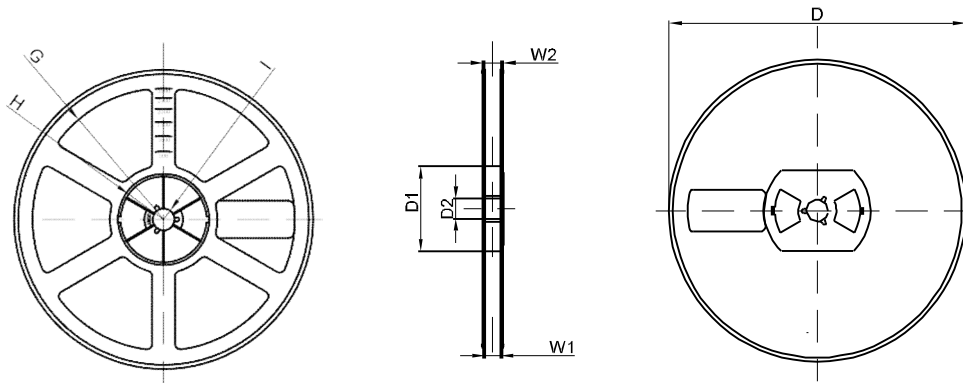


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

**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