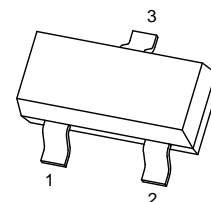


## SOT-23 Plastic-Encapsulate MOSFETS

### P-CHANNEL MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
-50 V	8Ω@-10V	-0.13A
	10Ω@ -5V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN

### Description:

These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry.

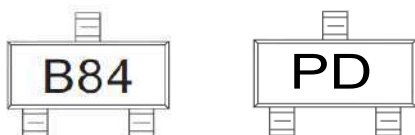
### Features:

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

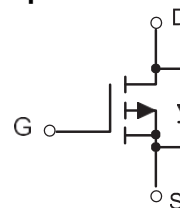
### Application:

- DC-DC converters, load switching, power management in portable and battery-powered products such as computers, printers, cellular and cordless telephones.

### MARKING



### Equivalent Circuit



### MAXIMUM RATINGS ( $T_a=25^{\circ}C$ unless otherwise noted)

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 (note 1) @tp <10 μs	$I_{DM}$	-0.52	A
Power Dissipation	$P_D$	360	mW
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	350	°C/W
Operation Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	°C
Maximum Lead Temperature for Soldering Purposes, Duration for 5 Seconds	$T_L$	260	°C

## MOSFET ELECTRICAL CHARACTERISTICS

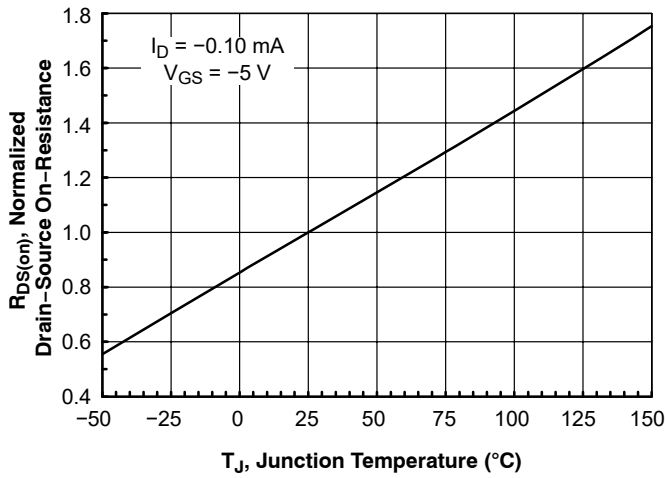
$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-50			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -50V, V_{GS} = 0V$			-15	$\mu A$
		$V_{DS} = -25V, V_{GS} = 0V$			-0.1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 5$	$\mu A$
Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.9	-1.65	-2	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = -5V, I_D = -0.1A$		1.2	10	$\Omega$
		$V_{GS} = -10V, I_D = -0.1A$		1.0	8	$\Omega$
Forward transconductance (note 1)	$g_{FS}$	$V_{DS} = -25V, I_D = -100mA$	50			mS
<b>DYNAMIC CHARACTERISTICS (note 4)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 5V, V_{GS} = 0V, f = 1MHz$		30		pF
Output capacitance	$C_{oss}$			10		pF
Reverse transfer capacitance	$C_{rss}$			5		pF
<b>SWITCHING CHARACTERISTICS (note 4)</b>						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V,$ $R_L = 50\Omega, I_D = -2.5A$		2.5		ns
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
<b>SOURCE-DRAIN DIODE CHARACTERISTICS</b>						
Continuous Current	$I_S$				-0.13	A
Pulsed Current	$I_{SM}$				-0.52	A
Diode forward voltage (note 3)	$V_{SD}$	$I_S = -0.13A, V_{GS} = 0V$			-2.2	V

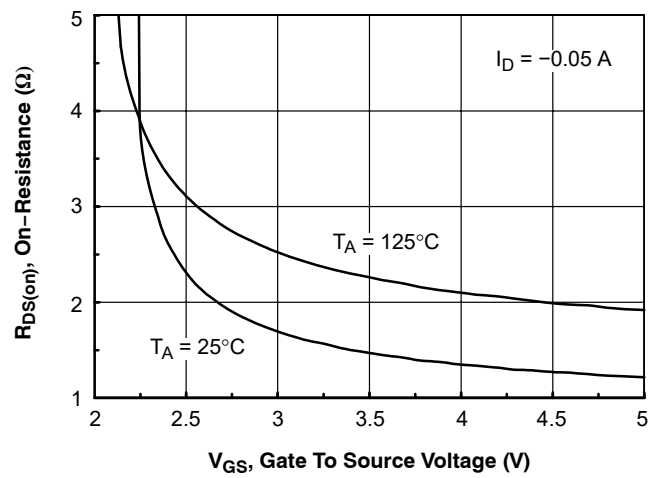
**Notes :**

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board ,  $t \leq 10s$ .
3. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to producing.

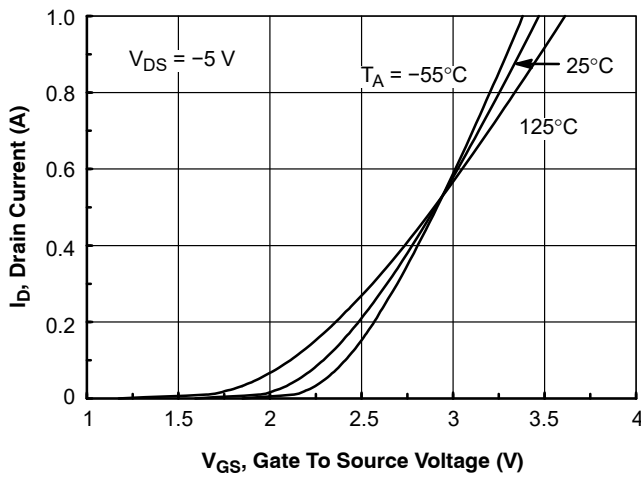
**Typical Characteristics**



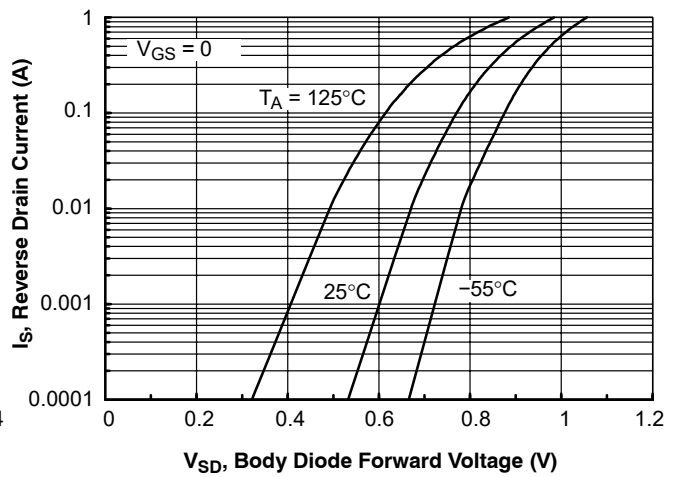
**Figure 3. On-Resistance Variation with Temperature**



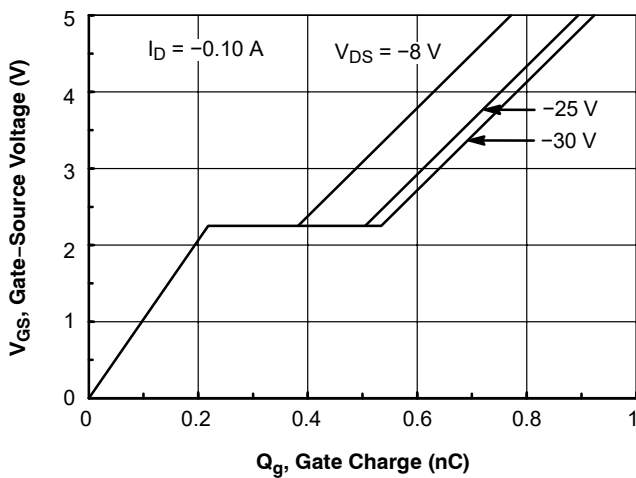
**Figure 4. On-Resistance Variation with Gate-to-Source Voltage**



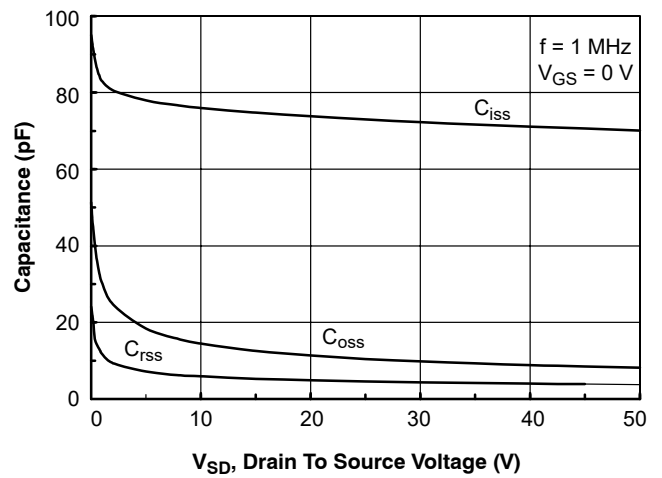
**Figure 5. Transfer Characteristics**



**Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature**

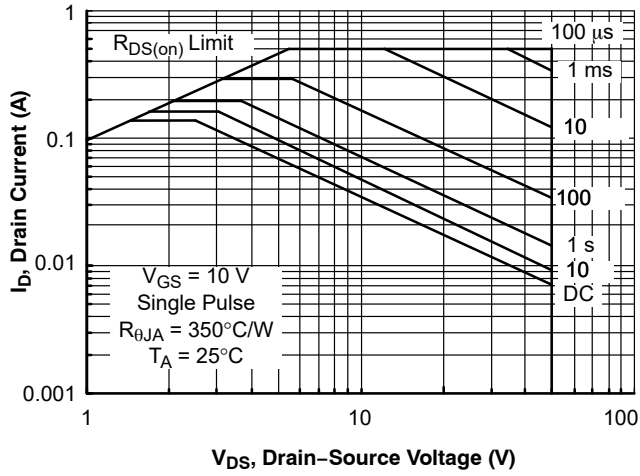


**Figure 7. Gate Charge Characteristics**

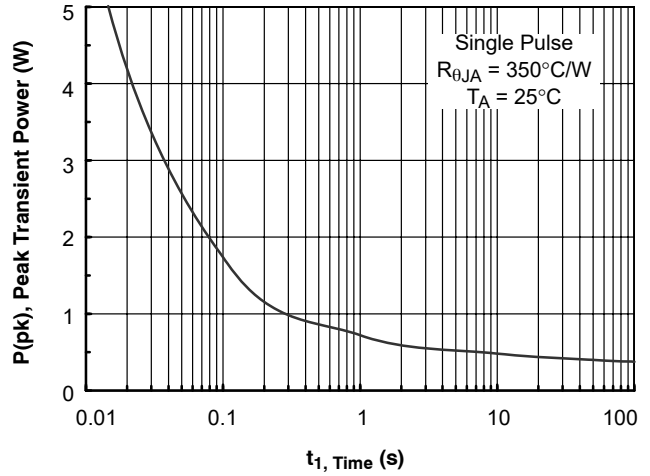


**Figure 8. Capacitance Characteristics**

**Typical Characteristics**

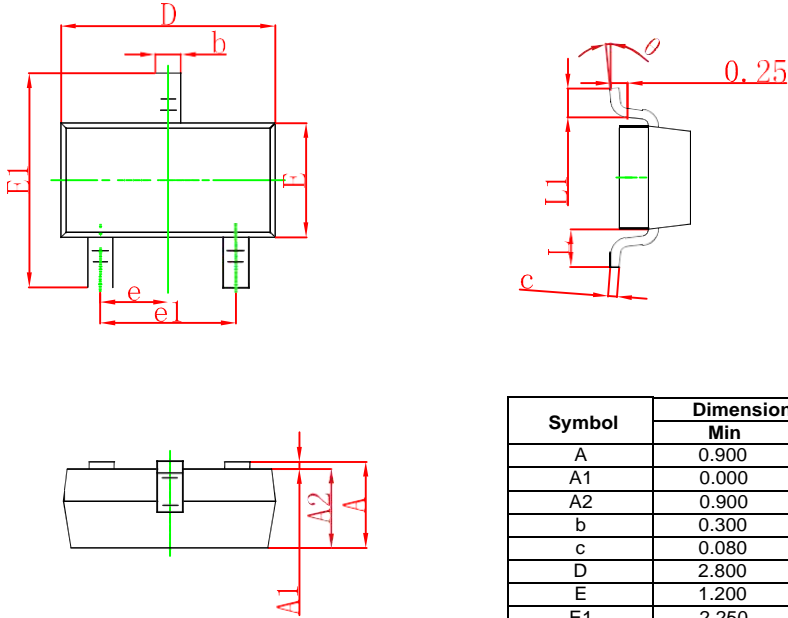


**Figure 9. Maximum Safe Operating Area**



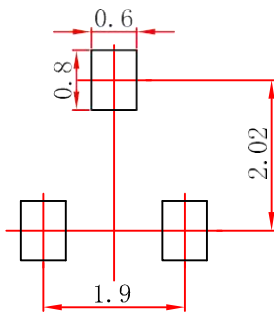
**Figure 10. Single Pulse Maximum Power Dissipation**

**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°

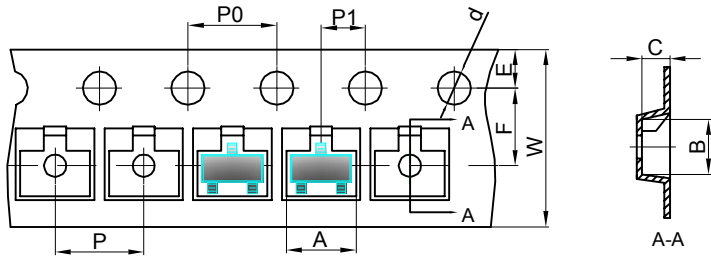
**SOT-23 Suggested Pad Layout**



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

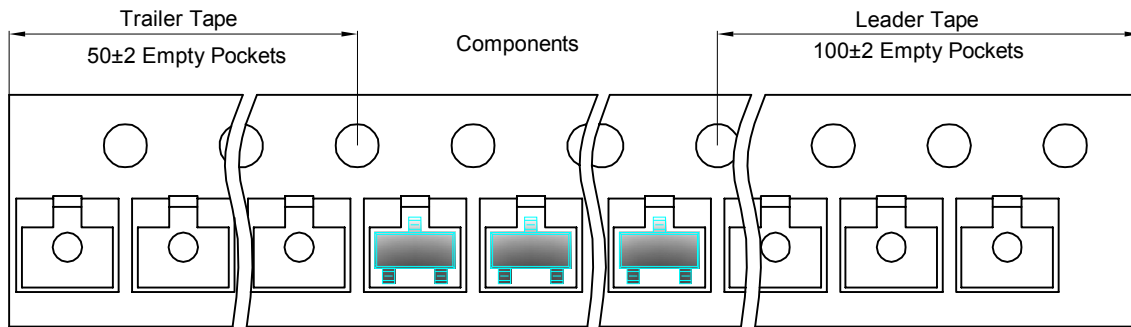
## SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

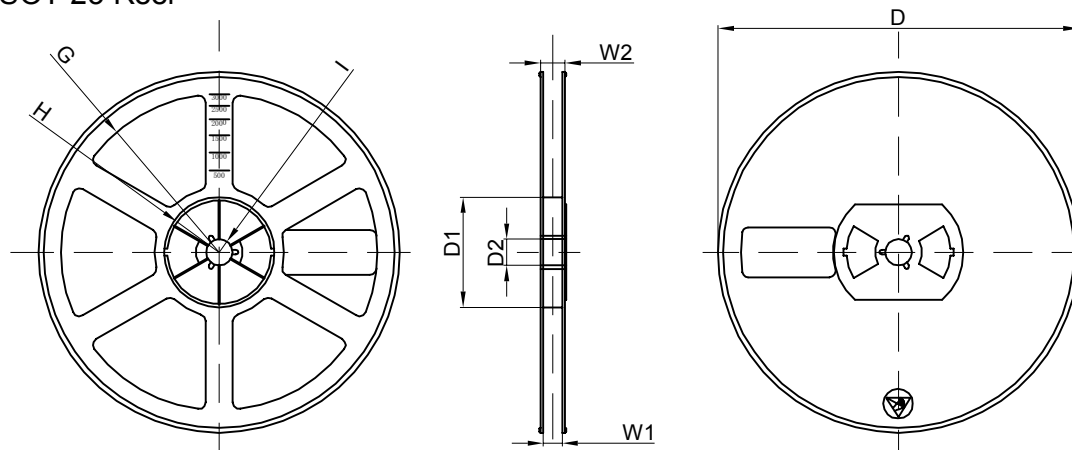


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

## SOT-23 Tape Leader and Trailer



## 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	30,000 pcs	203×203×195	120,000 pcs	438×438×220	