



## P-CHANNEL ENHANCEMENT MODE MOSFET

This is a P-channel, enhancement-mode MOSFET, housed in the industry-standard, SOT-23 package. This device is ideal for portable applications where board space is at a premium.

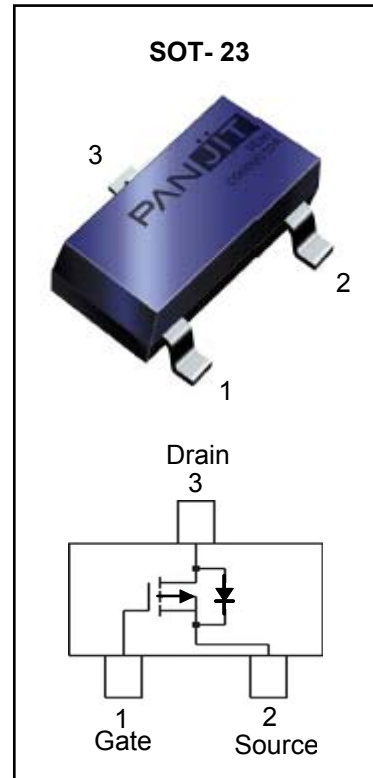
### FEATURES

- Low On-Resistance
- Low Gate Threshold Voltage
- Fast Switching
- Available in lead-free plating (100% matte tin finish)

### APPLICATIONS

- Switching Power Supplies
- Hand-Held Computers, PDAs

**MARKING CODE: 84L**



### MAXIMUM RATINGS

$T_J = 25^\circ\text{C}$  Unless otherwise noted

Rating	Symbol	Value	Units
Drain-Source Voltage	$V_{DSS}$	- 50	V
Drain-Gate Voltage (Note 1)	$V_{DGR}$	- 50	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	$I_D$	130	mA
Total Power Dissipation (Note 2)	$P_D$	200	mW
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note 1.  $R_{GS} < 20\text{K ohms}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Units
Thermal Resistance, Junction to Ambient (Note 2)	$R_{thja}$	625	$^\circ\text{C/W}$

Note 2. FR-5 board 1.0 x 0.75 x 0.062 inch with minimum recommended pad layout



## ELECTRICAL CHARACTERISTICS $T_J = 25^\circ\text{C}$ Unless otherwise noted

### OFF CHARACTERISTICS (Note 3)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D = -250\mu\text{A}, V_{GS} = 0\text{V}$	-50	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -50\text{V}, V_{GS} = 0\text{V}, T_J = 25^\circ\text{C}$	-	-	-15	$\mu\text{A}$
		$V_{DS} = -50\text{V}, V_{GS} = 0\text{V}, T_J = 125^\circ\text{C}$	-	-	-60	
		$V_{DS} = -25\text{V}, V_{GS} = 0\text{V}, T_J = 25^\circ\text{C}$	-	-	-0.1	
Gate-Body Leakage	$I_{GSS}$	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$	-	-	$\pm 10$	nA

### ON CHARACTERISTICS (Note 3)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -1\text{mA}$	-0.8	-1.44	-2.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -5\text{V}, I_D = -0.1\text{A}$	-	3.8	10	Ohms
Forward Transconductance	$g_{FS}$	$V_{DS} = -25\text{V}, I_D = -0.1\text{A}$	0.05	-	-	S

### DYNAMIC CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Capacitance	$C_{iss}$	$V_{DS} = -25\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$	-	-	45	pF
Output Capacitance	$C_{oss}$		-	-	25	pF
Reverse Transfer Capacitance	$C_{rss}$		-	-	12	pF

### SWITCHING CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD} = -30\text{V}, I_D = -0.27\text{A}, R_{GEN} = 50\text{ohm}, V_{GS} = -10\text{V}$	-	7.5	-	ns
Turn-Off Delay Time	$t_{D(OFF)}$		-	25	-	ns

Note 3. Short duration test pulse used to minimize self-heating



## ELECTRICAL CHARACTERISTIC CURVES

$T_J = 25^\circ\text{C}$  Unless otherwise noted

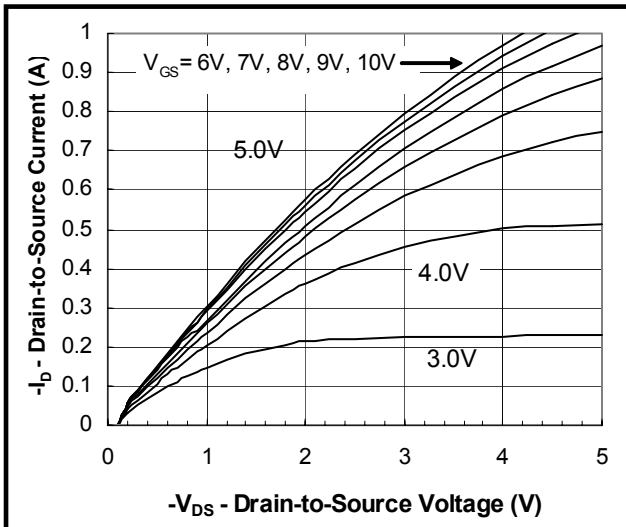


Fig. 1. Output Characteristics

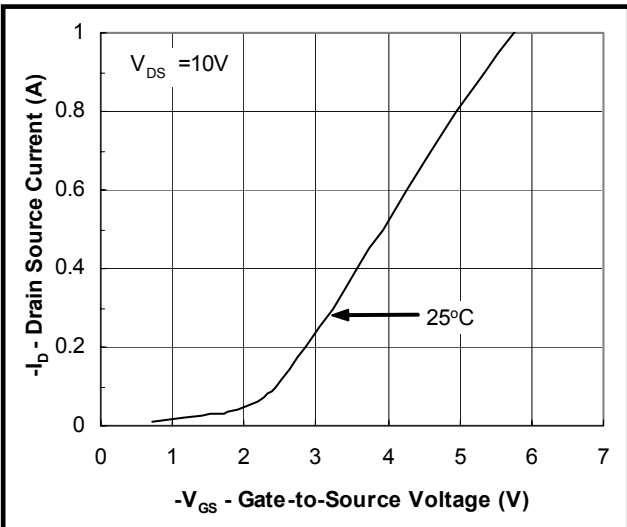


Fig. 2. Transfer Characteristics

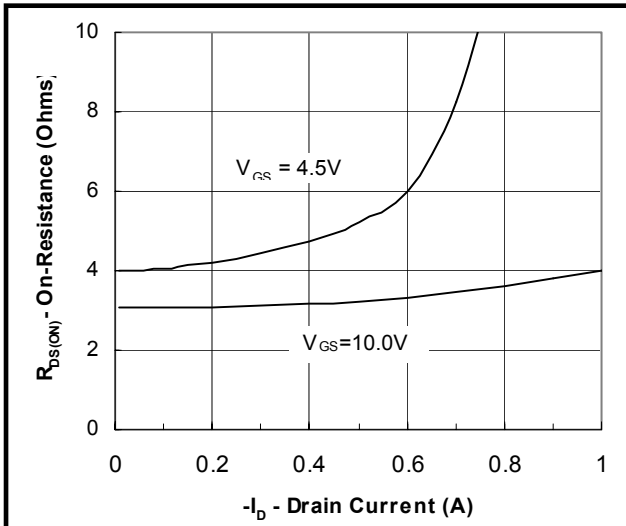


Fig. 3. On-Resistance vs. Drain Current

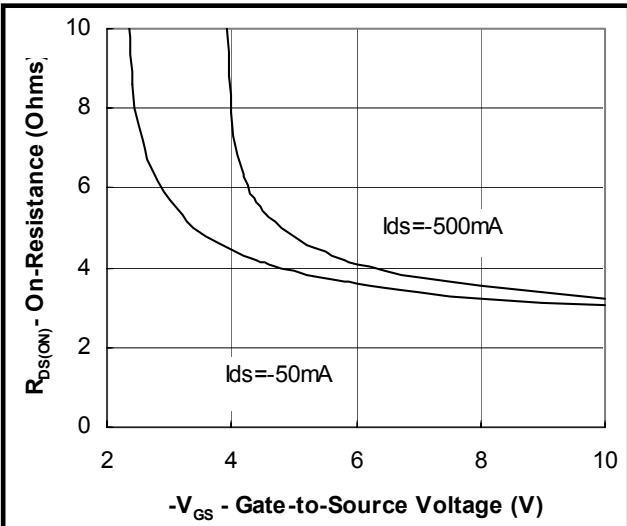


Fig. 4. On-Resistance vs. G-S Voltage

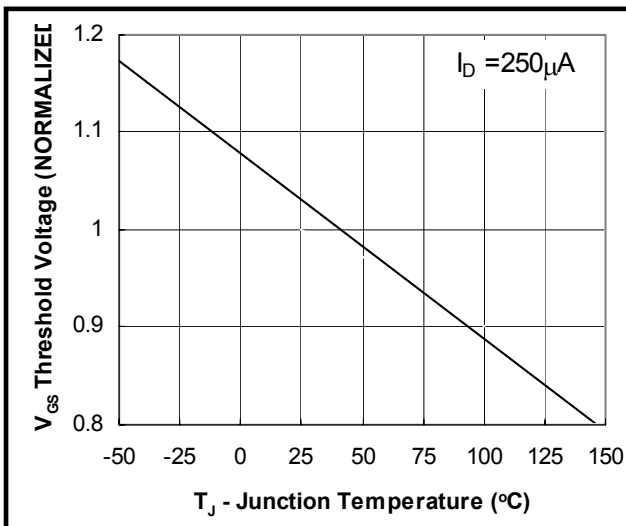


Fig. 5. Threshold Voltage vs. Temperature

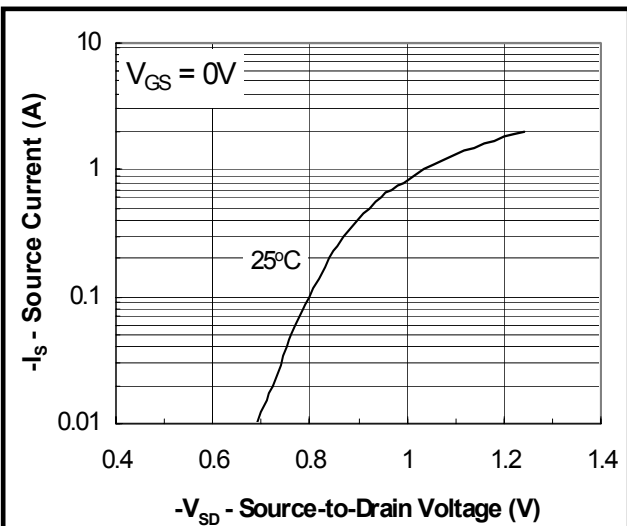
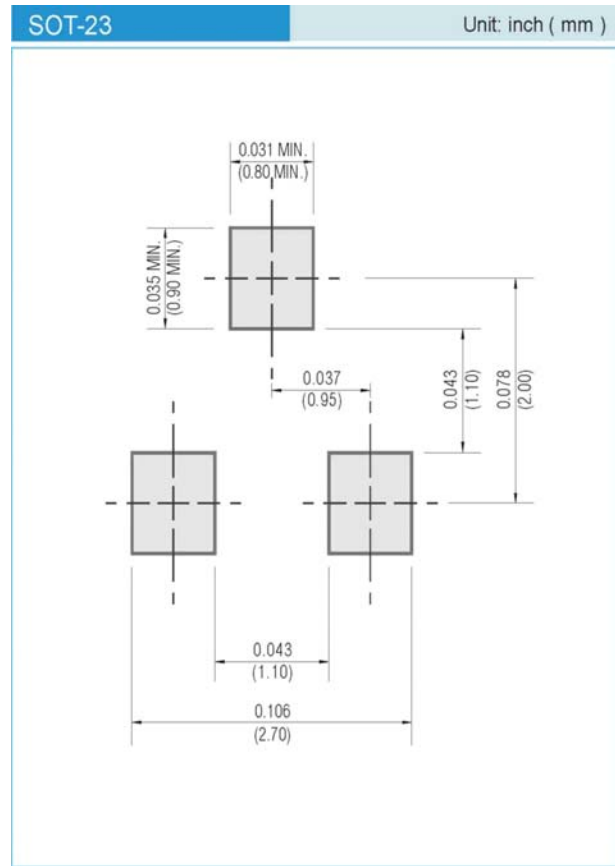
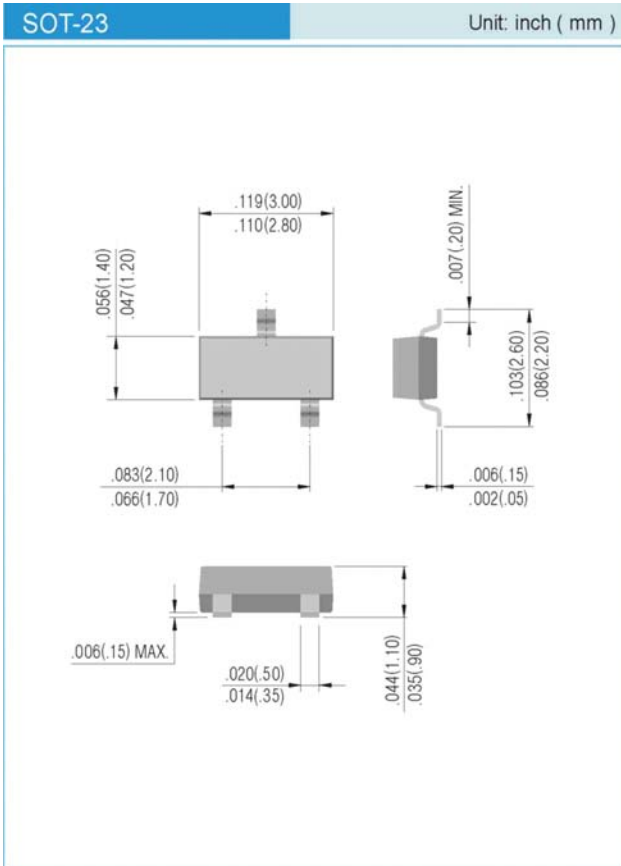


Fig. 6. Source-Drain Diode Forward Voltage



## PACKAGE LAYOUT AND SUGGESTED PAD DIMENSIONS



## ORDERING INFORMATION

BSS84 T/R7 - 7 inch reel, 3K units per reel

BSS84 T/R13 - 13 inch reel, 10K units per reel

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