

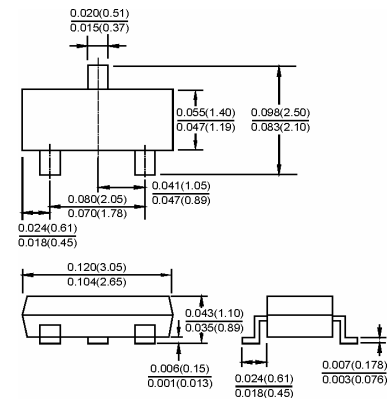
### SOT-23

#### FEATURE

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.



Dimensions in inches and (millimeters)

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

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 (note 1) @ $t_p < 10 \mu\text{s}$	$I_{DM}$	-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	$^\circ\text{C}$
Maximum Lead Temperature for Soldering Purposes , Duration for 5 Seconds	$T_L$	260	$^\circ\text{C}$



# BSS84 P-CHANNEL MOSFET



## MOSFET ELECTRICAL CHARACTERISTICS $T_a=25^\circ\text{C}$ unless otherwise specified

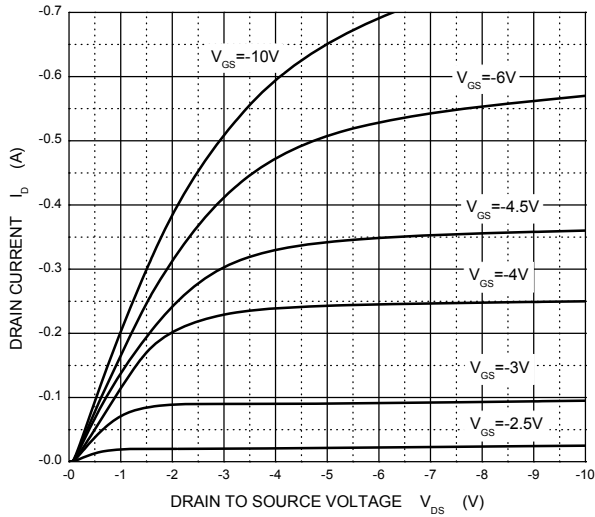
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-50			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -50V, V_{GS} = 0V$			-15	$\mu A$
		$V_{DS} = -25V, V_{GS} = 0V$			-0.1	$\mu A$
Gate-body 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		-2	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = -5V, I_D = -0.1A$			10	$\Omega$
		$V_{GS} = -10V, I_D = -0.1A$			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
Diode forward voltage (note 3)	$V_{SD}$	$I_S = -0.13A, V_{GS} = 0V$			-2.2	V

### Notes :

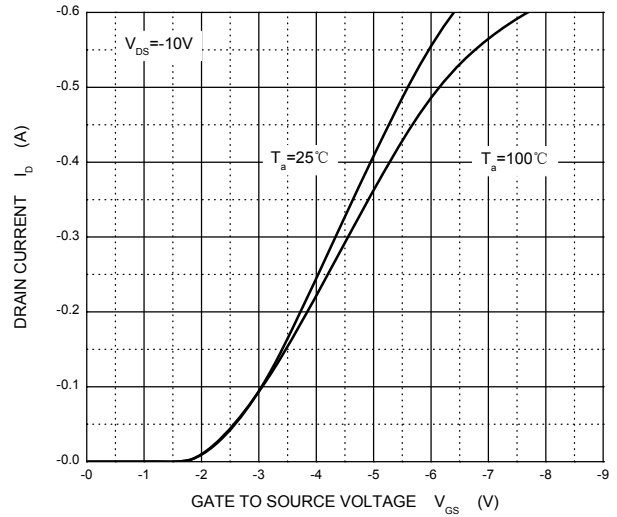
1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board ,  $t_s \leq 10s$ .
3. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to producing.

### Typical Characteristics

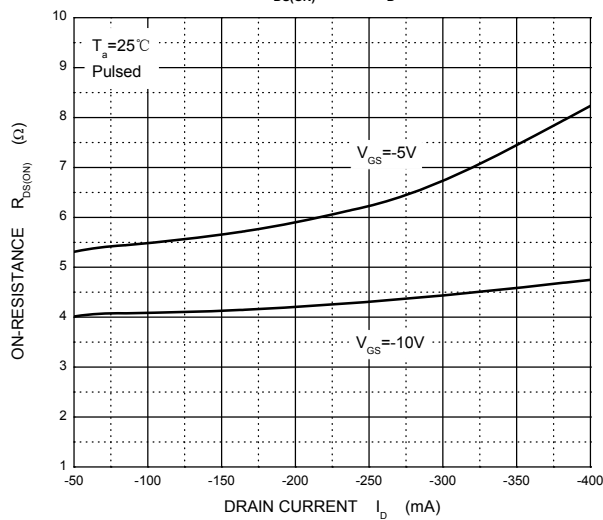
Output Characteristics



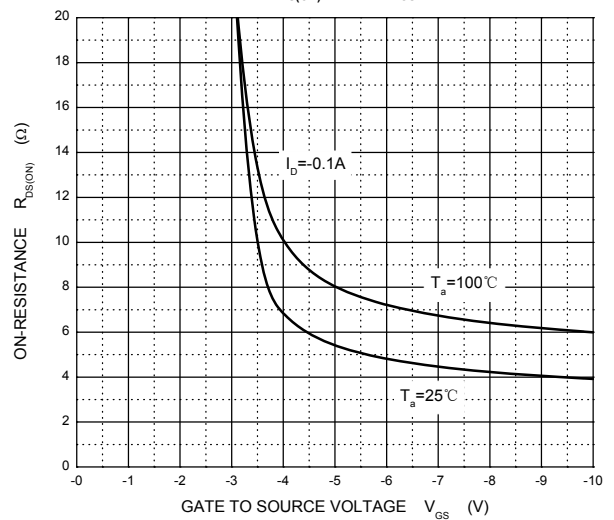
Transfer Characteristics



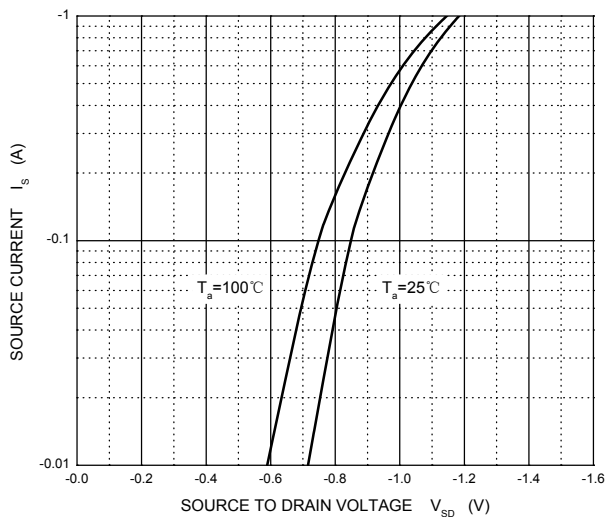
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



Threshold Voltage

