



## Description

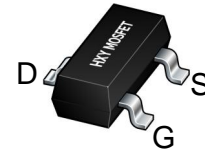
The BSS84AK uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications.

## General Features

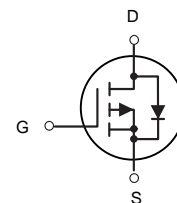
$V_{DS} = -50V, I_D = -0.13A$   
 $R_{DS(ON)} < 5\Omega @ V_{GS} = -10V$   
 $R_{DS(ON)} < 6\Omega @ V_{GS} = -4.5V$

## Application

Power switching application  
Hard switched and high frequency circuits  
DC-DC converter



**SOT-23**



P-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
BSS84AK	SOT-23	B84/PD	3000

## Absolute Maximum Ratings ( $T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-50	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	-0.13	A
Pulsed Drain Current	$I_{DM}$	-0.5	A
Maximum Power Dissipation	$P_D$	0.35	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^\circ C$
Thermal Resistance ,Junction-to-Ambient <sup>(Note 2)</sup>	$R_{\theta JA}$	62.5	$^\circ C/W$



**Electrical Characteristics (Ta=25°C unless otherwise specified)**

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
Static						
V <sub>(BR)DSS</sub>	Drain-source breakdown voltage	V <sub>GS</sub> =0, I <sub>D</sub> =250μA	-50			V
V <sub>GS(th)</sub>	Gate threshold voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.8		-2.0	V
I <sub>GSS</sub>	Gate-body leakage current	V <sub>DS</sub> =0, V <sub>GS</sub> =±10V			±10	μA
I <sub>DSS</sub>	Zero gate voltage drain current	V <sub>DS</sub> =-50V, V <sub>GS</sub> =0V			-10	μA
		V <sub>DS</sub> =-40V, V <sub>GS</sub> =0V			-100	nA
R <sub>DS(on)</sub>	Drain-source on-resistance <sup>a</sup>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-0.13A		2	5	Ω
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.13A		2.5	6	Ω
g <sub>FS</sub>	Forward transconductance <sup>a</sup>	V <sub>DS</sub> =-25V, I <sub>D</sub> =-0.13A	50			mS
V <sub>SD</sub>	Diode forward voltage	I <sub>S</sub> =-0.13A, V <sub>GS</sub> =0V			-1.0	V
Dynamic						
C <sub>iss</sub>	Input capacitance	V <sub>DS</sub> =-25V, V <sub>GS</sub> =0V, f=1MHz		25		pF
C <sub>oss</sub>	Output capacitance			15		
C <sub>rss</sub>	Reverse transfer capacitance <sup>b</sup>			3.5		
Switching <sup>b</sup>						
t <sub>d(on)</sub>	Turn-on delay time	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V I <sub>D</sub> =-200mA, R <sub>GEN</sub> =25Ω		16.7		nS
t <sub>r</sub>	Rise time			8.6		
t <sub>d(off)</sub>	Turn-off delay time			17.9		
t <sub>f</sub>	Fall time			5.3		

Notes :

a. Pulse Test : Pulse width $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

b. Guaranteed by design, not subject to producing.



## Typical Characteristics

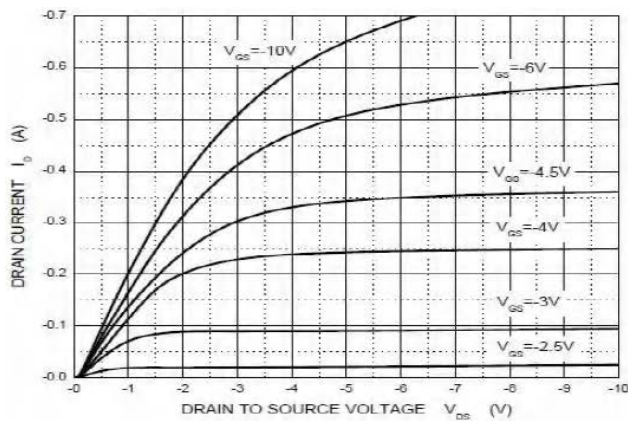


Figure1. Output Characteristics

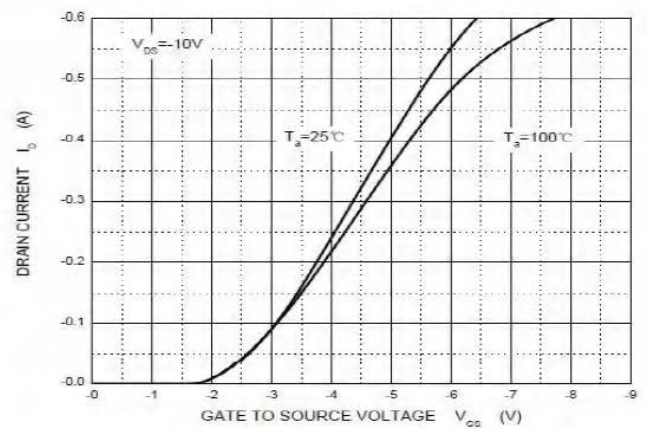


Figure2. Transfer Characteristics

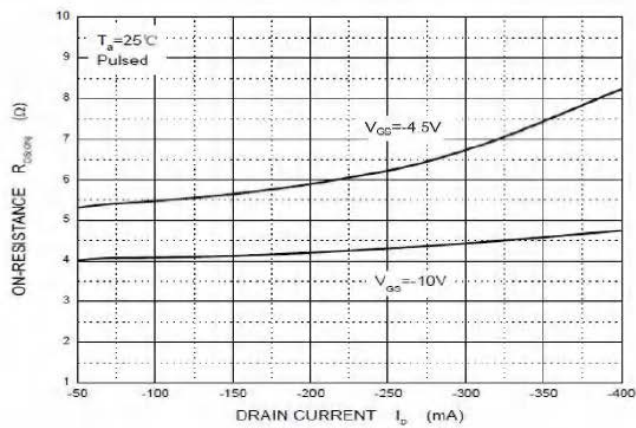


Figure3. Drain-Source on Resistance

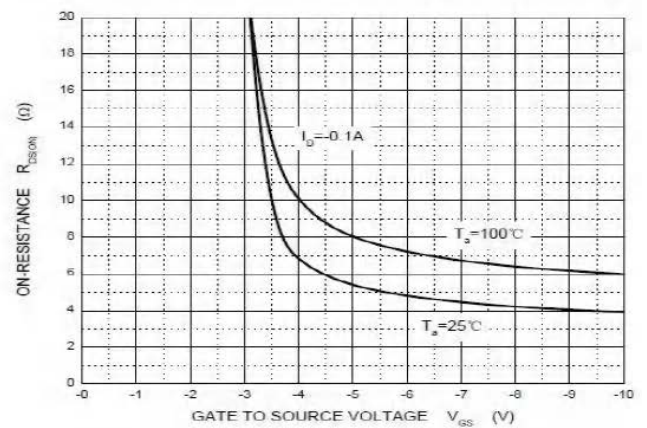


Figure4. Drain-Source on Resistance

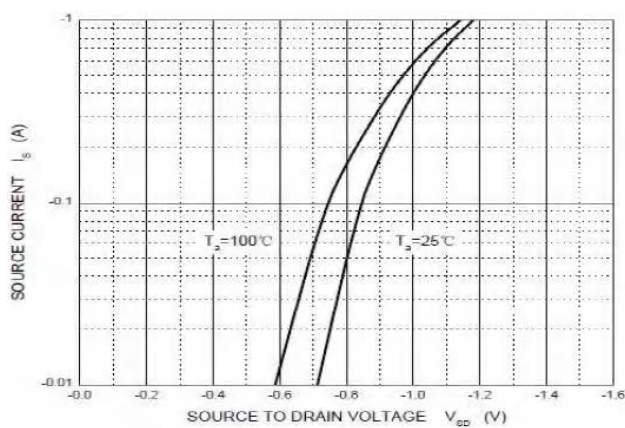


Figure5. Diode Forward Voltage vs. current

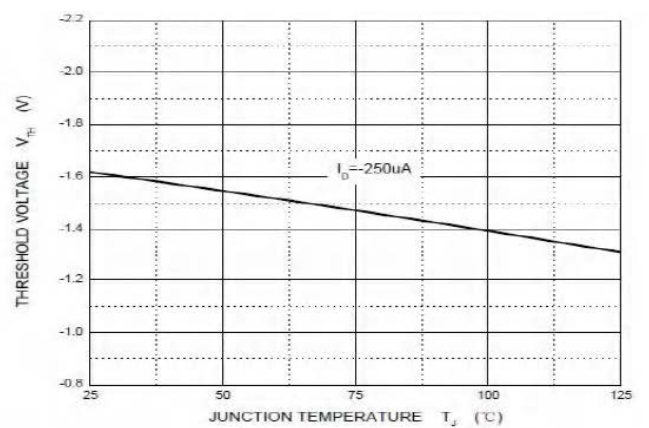
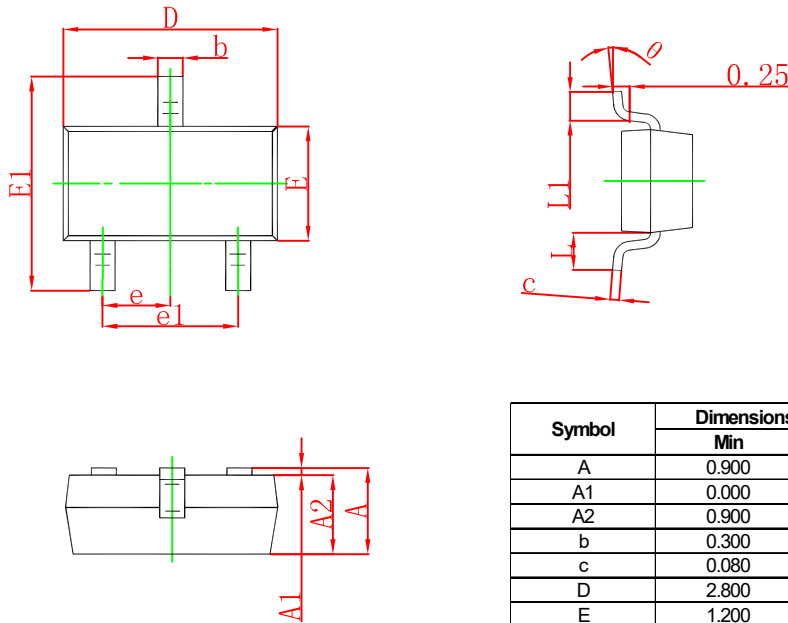


Figure6. Gate Threshold vs. Junction Temperature

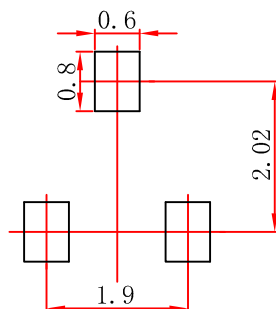


## SOT-23 Package Outline Dimensions



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:  $\pm 0.05\text{mm}$ .  
3. The pad layout is for reference purposes only.



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