

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
-60V	4.2Ω@-10V	-0.13A
	4.5Ω@-4.5V	

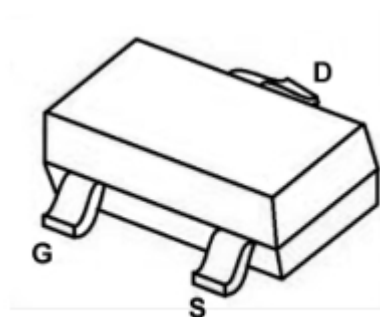
## Feature

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

## Application

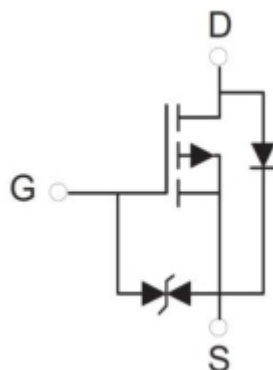
- DC-DC converters
- load switching
- power management in portable
- battery-powered products

## Package

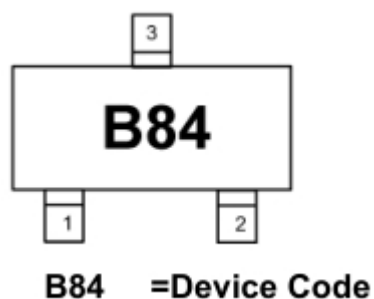


**SOT-23**

## Circuit diagram



## Marking



## Absolute maximum ratings

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-0.13	A
Pulsed Drain Current@ $t_p < 10\mu\text{s}$	$I_{DM}$	-0.52	A
Power Dissipation	$P_D$	225	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^{\circ}\text{C}$

## Electrical characteristics

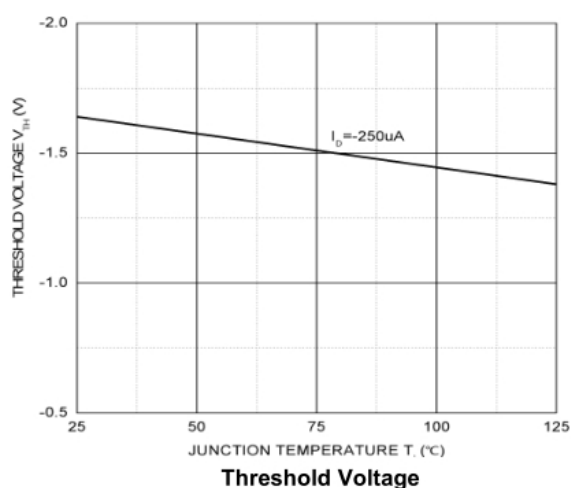
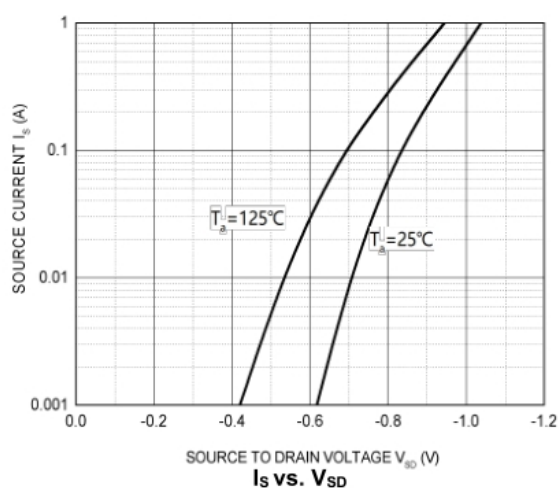
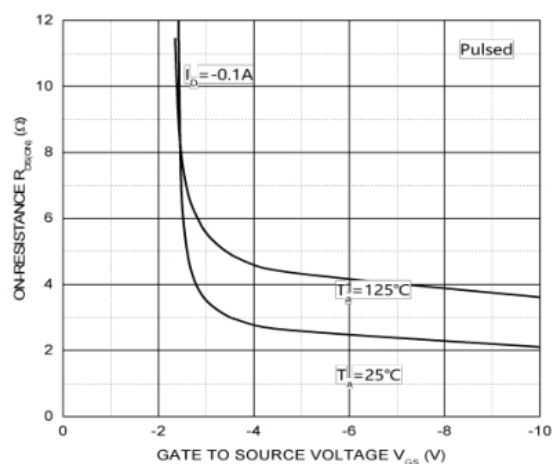
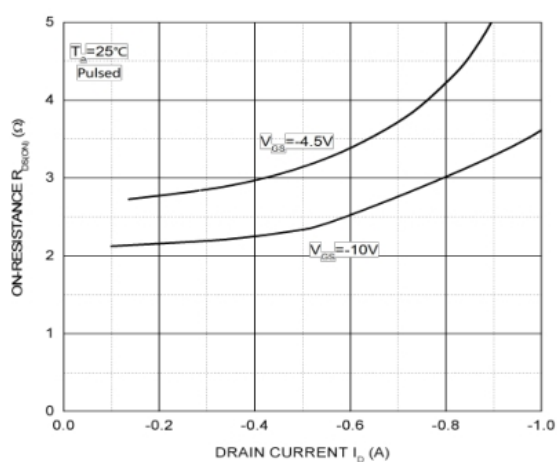
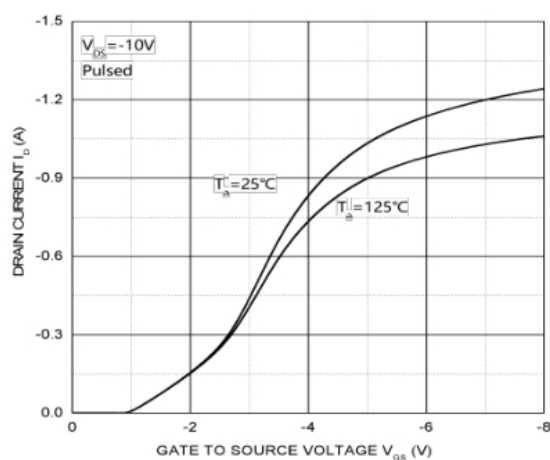
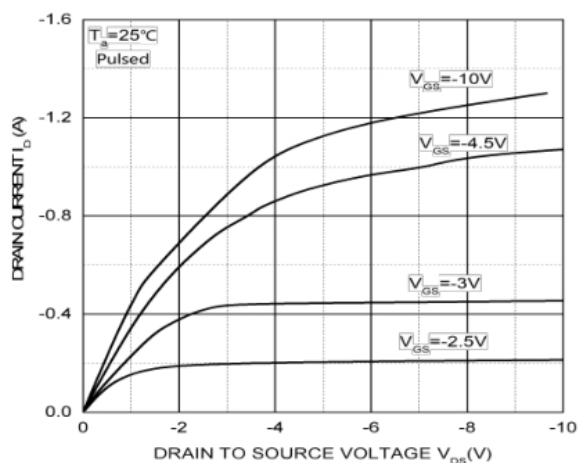
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-60			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -48V, V_{GS} = 0V$			-1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 10$	$\mu A$
Gate threshold voltage <sup>3)</sup>	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.8	-1.5	-2.5	V
Drain-source on-resistance <sup>3)</sup>	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -0.15A$		4.2	6	$\Omega$
		$V_{GS} = -4.5V, I_D = -0.15A$		4.5	7	
Dynamic characteristics <sup>4)</sup>						
Input Capacitance	$C_{iss}$	$V_{DS} = -5V, V_{GS} = 0V,$ $f = 1MHz$		30		pF
Output Capacitance	$C_{oss}$			10		
Reverse Transfer Capacitance	$C_{rss}$			5		
Switching Characteristics <sup>4)</sup>						
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		
Turn-off delay time	$t_{d(off)}$			16		
Turn-off fall time	$t_f$			8		
Source-Drain Diode Characteristics						
Diode Forward voltage	$V_{SD}$	$V_{GS} = 0V, I_S = -0.13A$			-1.3	V

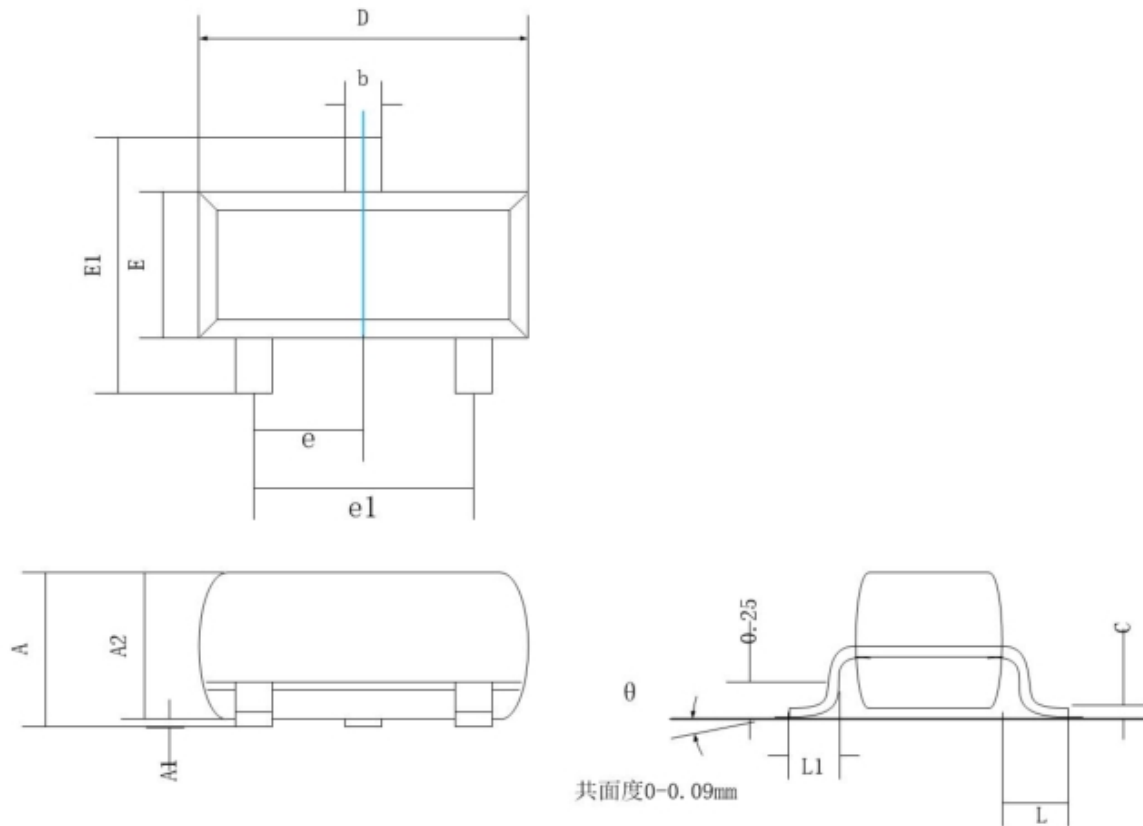
### Notes:

- 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 production.

## Typical Characteristics



## SOT-23 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50