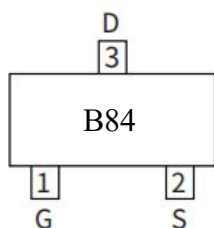


**Features**

- Super Low Gate Charge
- Green Device Available
- Excellent Cdv/dt effect decline
- Advanced high cell density Trench technology

Bvdss**-60V****Rdson****3.2Ω****ID****-170mA****Application**

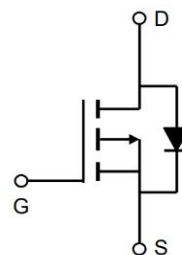
- Battery protection
- Load Switch
- Uninterruptible power supply

RoHS**Package**

Marking and pin assignment



SOT23 top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
B84	BSS84	SOT23	3000

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, $V_{GS}@-4.5\text{V}^1$	$I_D@T_A=25^{\circ}\text{C}$	-170	mA
	$I_D@T_A=70^{\circ}\text{C}$	-145	mA
Pulsed Drain Current ²	I_{DM}	-1.21	A
Total Power Dissipation ³	P_D	0.35	W
Storage Temperature Range	T_{STG}	-55 ~ 150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-55 ~ 150	$^{\circ}\text{C}$

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
Thermal Resistance Junction-Case	$R_{\theta JC}$	-	$^{\circ}\text{C/W}$



Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	S	D	
HLBSS84	SOT23	1	2	3	Tape Reel

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_G=\pm 20V$	-	-	± 100	nA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.9	-1.4	-2	V
Drain-Source On-Resistance ²	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-150mA$	-	3.2	7.8	Ω
		$V_{GS}=-4.5V, I_D=-150mA$	-	3.5	9.8	
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V,$ $f=1MHz$	-	43	-	pF
Output Capacitance	C_{oss}		-	3	-	
Reverse Transfer Capacitance	C_{rss}		-	1.9	-	
Total Gate Charge	Q_g	$V_{GS}=-10V, V_{DS}=-30V,$ $I_D=-150mA$	-	1.8	-	nC
Gate-Source Charge	Q_{gs}		-	0.6	-	
Gate-Drain Charge	Q_{gd}		-	0.2	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-30V, I_D=-150mA,$ $R_G=2.5\Omega, V_G=-4.5V$	-	8.6	-	ns
Rise Time	t_r		-	20	-	
Turn-off Delay Time	$t_{d(off)}$		-	15	-	
Fall Time	t_f		-	77	-	
Continuous Source Current ¹	I_S	$V_G=V_D=0V, \text{Force Current}$	-	-	-170	mA
Source Diode Forward Current ²	I_{SM}		-	-	-	
Drain Forward Voltage ²	V_{SD}	$I_S=-170mA, V_{GS}=0V$	-	-	-1.2	V
Reverse Recovery Time	t_{rr}	$I_F=-150mA, di/dt=100A/us$	-	23	-	nS
Reverse Recovery Charge	Q_{rr}		-	13	-	nC

Notes:

1. Pulse Test: Pulse width $\leq 10\mu s$, duty cycle $\leq 2\%$.
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.



Typical Performance Characteristics

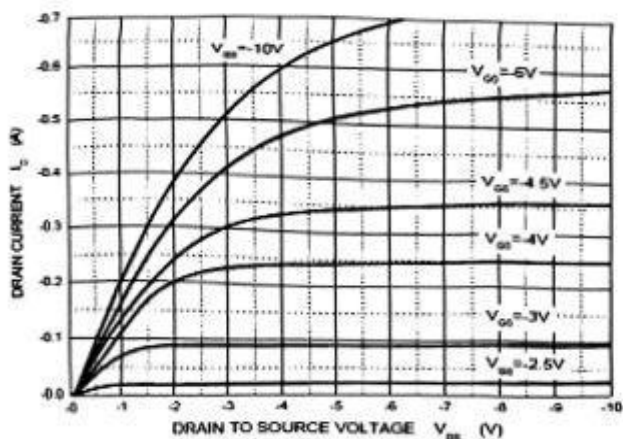


Figure1. Output Characteristics

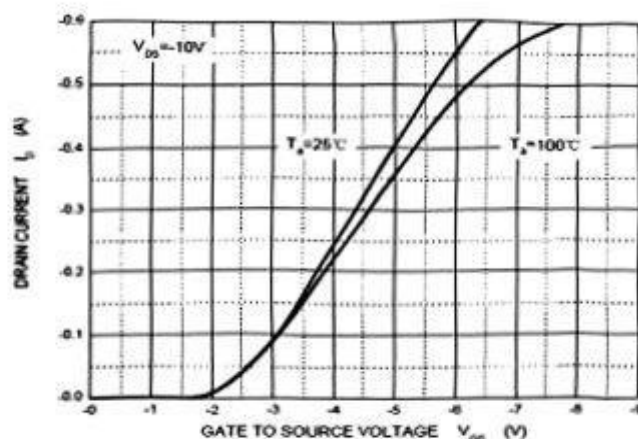


Figure2. Transfer Characteristics

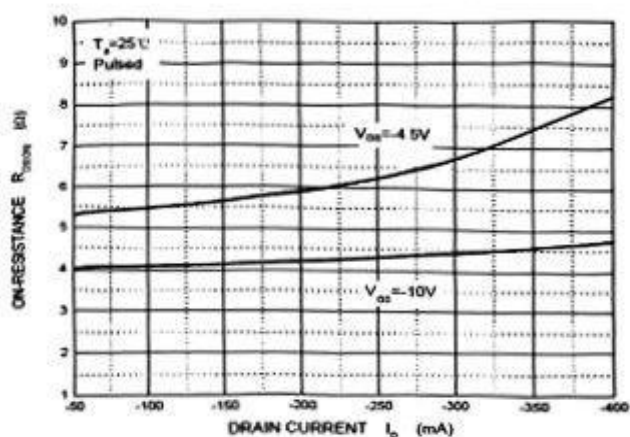


Figure3. Drain-Source on Resistance

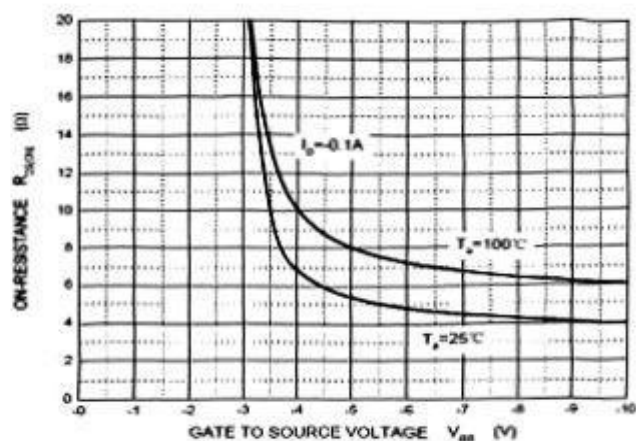


Figure4. Drain-Source on Resistance

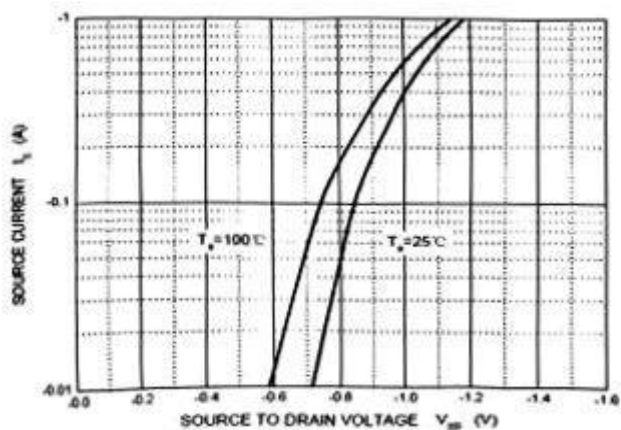


Figure5. Diode Forward Voltage vs. current

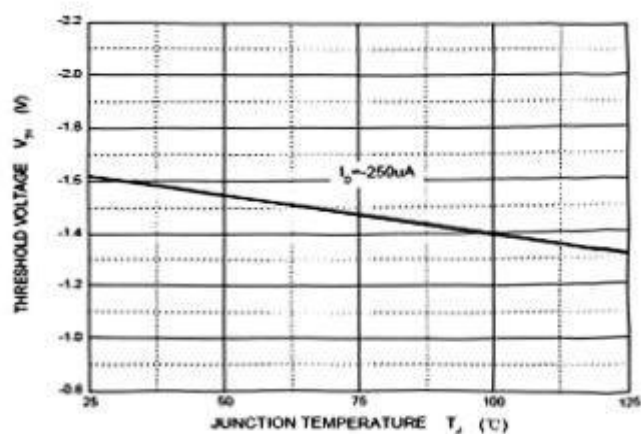


Figure6. Gate Threshold vs. Junction Temperature

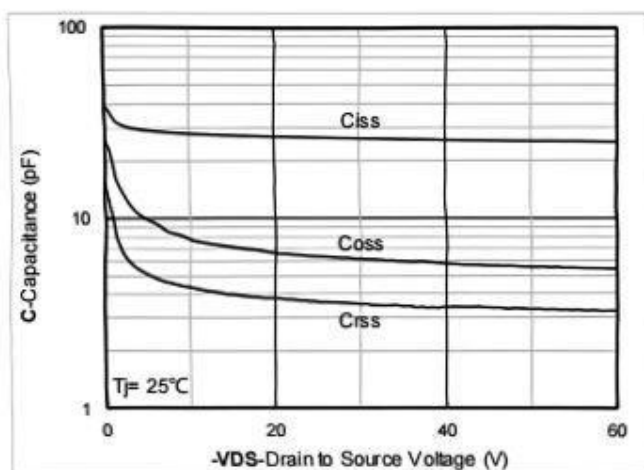


Figure7. Capacitance Characteristics

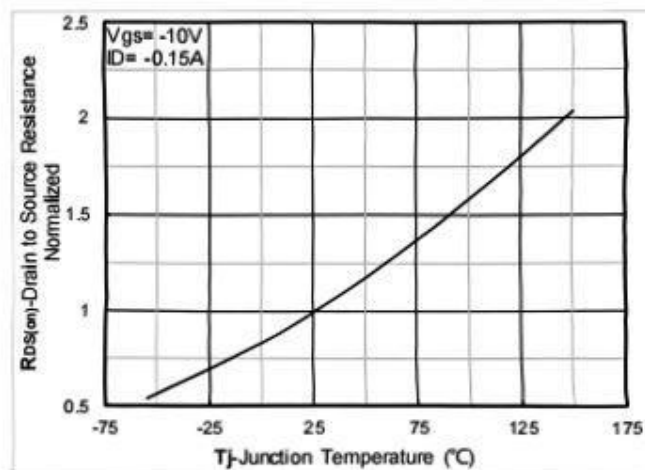
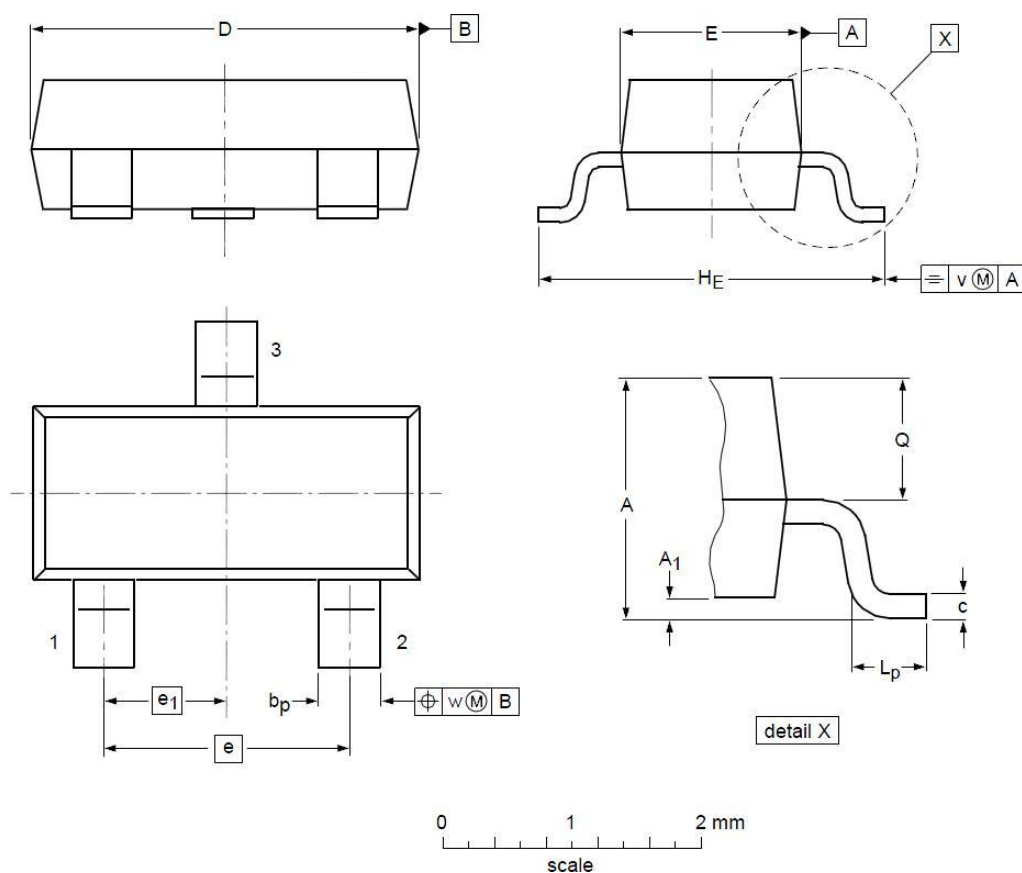


Figure8. Normalized On-Resistance

Package Dimensions SOT23





DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	A ₁	0.01	0.05	0.10
b _p	0.30	0.42	0.50	c	0.08	0.13	0.15
D	2.80	2.92	3.00	E	1.20	1.33	1.40
e	--	1.90	--	e ₁	--	0.95	--
H _E	2.25	2.40	2.55	L _p	0.30	0.42	0.50
Q	0.45	0.49	0.55	v	--	0.20	--
w	--	0.10	--				

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