

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D $T_A = +25^\circ C$
-50V	10Ω $V_{GS} = -5V$	-130mA

Description

This MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- General Purpose Interfacing Switch
- Power Management Functions
- Analog Switch

Features

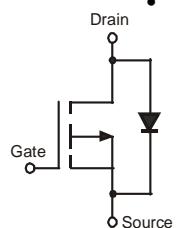
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

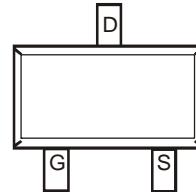
- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208 (e3)
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Weight: 0.006 grams (approximate)



Top View



Equivalent Circuit



Top View

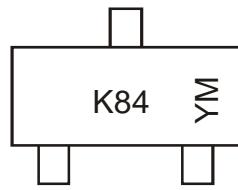
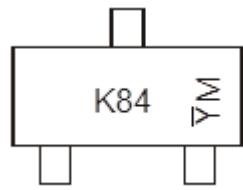
Ordering Information (Note 4 & 5)

Part Number	Compliance	Case	Packaging
BSS84W-7-F	Standard	SOT323	3000 / Tape & Reel
BSS84WQ-7-F	Automotive	SOT323	3000 / Tape & Reel

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.
- Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_grade_definitions/.

Marking Information



Date Code Key

Year	2012	2013	2014	2015	2016	2017	2018					
Code	Z	A	B	C	D	E	F					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

K84 = Product Type Marking Code

YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)

YM = Date Code Marking for CAT (Chengdu Assembly/ Test site)

 Y or \overline{Y} = Year (ex: A = 2013)

M = Month (ex: 9 = September)

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	-50	V
Drain-Gate Voltage (Note 6)	V_{DGR}	-50	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Note 6)	I_D	-130	mA
Pulsed Drain Current (Note 6)	I_{DM}	-1	A

Thermal Characteristics

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 6)	P_D	200	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-50	-75	—	V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -50\text{V}, V_{GS} = 0\text{V}, T_J = +25^\circ\text{C}$
		—	—	-2	μA	$V_{DS} = -50\text{V}, V_{GS} = 0\text{V}, T_J = +125^\circ\text{C}$
		—	—	-100	nA	$V_{DS} = -25\text{V}, V_{GS} = 0\text{V}, T_J = +25^\circ\text{C}$
Gate-Body Leakage	I_{GSS}	—	—	± 10	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(\text{th})}$	-0.8	-1.6	-2.0	V	$V_{DS} = V_{GS}, I_D = -1\text{mA}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	6	10	Ω	$V_{GS} = -5\text{V}, I_D = -0.1\text{A}$
Forward Transconductance	g_{FS}	0.05	—	—	S	$V_{DS} = -25\text{V}, I_D = -0.1\text{A}$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	—	45	pF	$V_{DS} = -25\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	—	25	pF	
Reverse Transfer Capacitance	C_{rss}	—	—	12	pF	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{D(\text{ON})}$	—	10	—	ns	$V_{DD} = -30\text{V}, I_D = -0.27\text{A}, R_{\text{GEN}} = 50\Omega, V_{GS} = -10\text{V}$
Turn-Off Delay Time	$t_{D(\text{OFF})}$	—	18	—	ns	

Notes: 6. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

7. Short duration pulse test used to minimize self-heating effect.

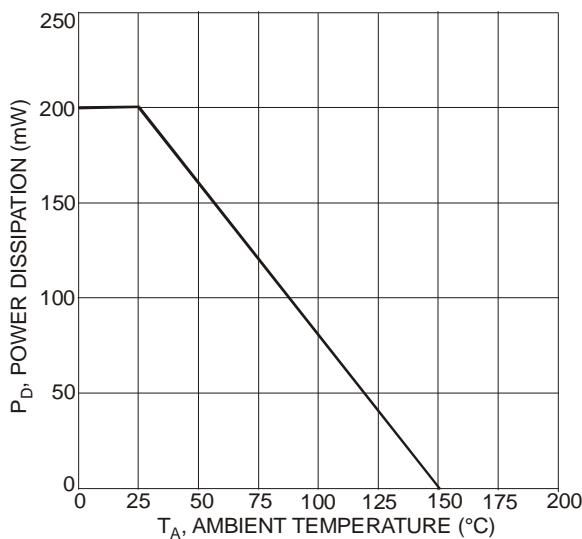


Fig. 1 Max Power Dissipation vs. Ambient Temperature

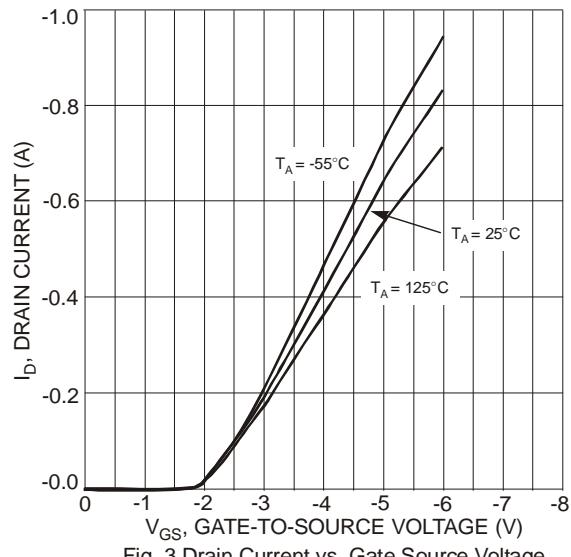


Fig. 3 Drain Current vs. Gate Source Voltage

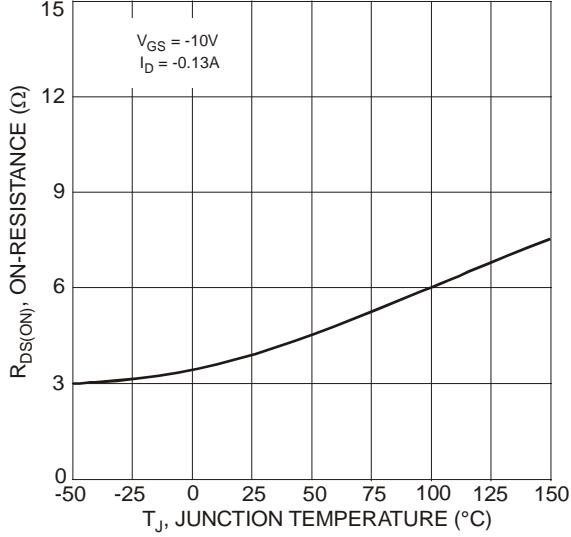


Fig. 5 On-Resistance vs. Junction Temperature

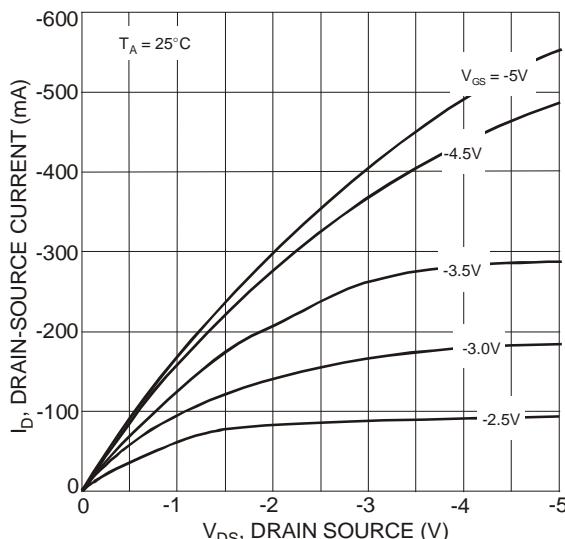


Fig. 2 Drain Source Current vs. Drain Source Voltage

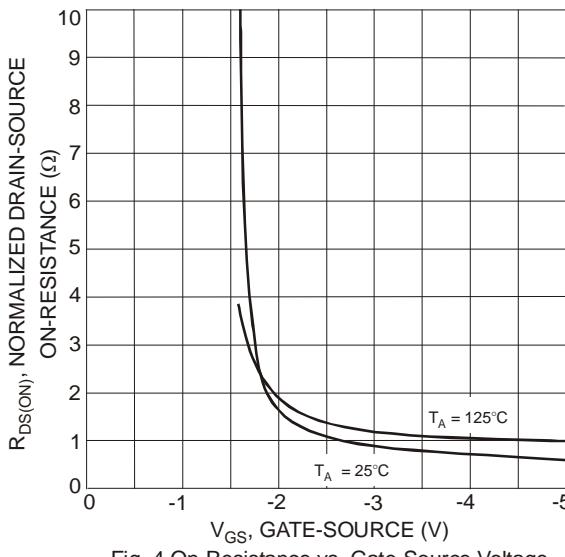


Fig. 4 On-Resistance vs. Gate-Source Voltage

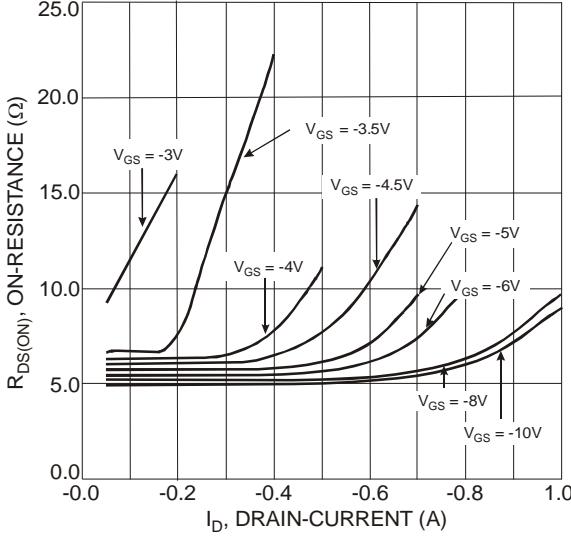
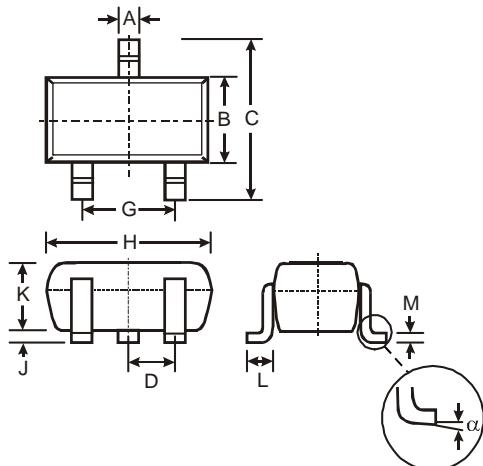


Fig. 6 On-Resistance vs. Drain-Current

Package Outline Dimensions

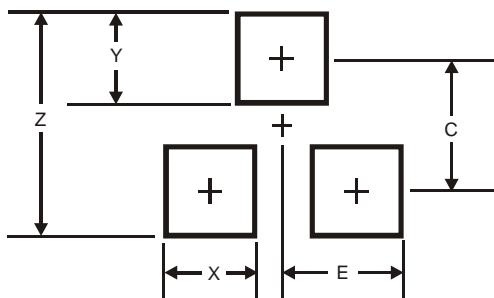
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT323			
Dim	Min	Max	Typ
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	0.95
L	0.25	0.40	0.30
M	0.10	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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