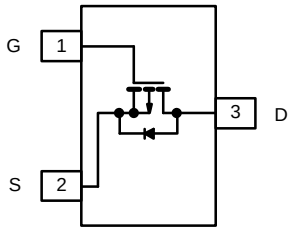
BSS84WQ-7-F-VB Datasheet

P-Channel 60 V (D-S) MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω)	$V_{GS(th)}$ (V)	I_D (mA)
- 60	4 at V_{GS} = - 10 V	- 1 to - 3	- 135

SOT-323
SC-70



Top View

FEATURES

- **Halogen-free According to IEC 61249-2-21 Definition**
- Trench Power MOSFET
- High-Side Switching
- Low On-Resistance: 4 Ω
- Low Threshold: - 2 V (typ.)
- Fast Swtiching Speed: 20 ns (typ.)
- Low Input Capacitance: 20 pF (typ.)
- Compliant to RoHS Directive 2002/95/EC

Pb-free
RoHS COMPLIANT
HALOGEN FREE Available

APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- Battery Operated Systems
- Power Supply Converter Circuits
- Solid-State Relays

BENEFITS

- Ease in Driving Switches
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Easily Driven without Buffer

ABSOLUTE MAXIMUM RATINGS T_A = 25 °C, unless otherwise noted				
Parameter		**Symbol**	**Limit**	**Unit**
Drain-Source Voltage		V_{DS}	- 60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current[a]	T_A = 25 °C	I_D	- 135	mA
	T_A = 100 °C		- 105	
Pulsed Drain Current[b]		I_{DM}	- 800	
Power Dissipation[a]	T_A = 25 °C	P_D	350	mW
	T_A = 100 °C		140	
Maximum Junction-to-Ambient[a]		R_{thJA}	350	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150	°C

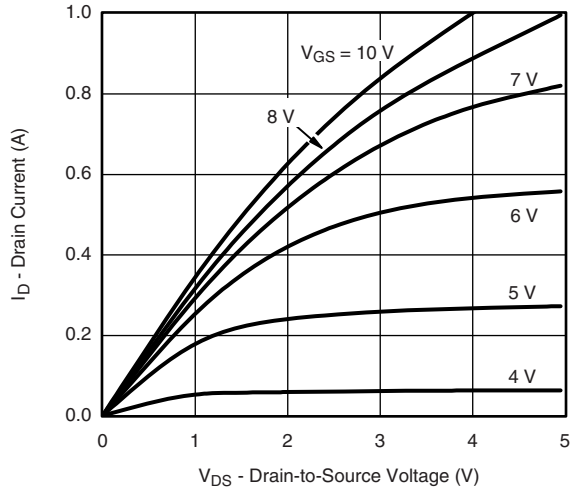
Notes:
a. Surface mounted on FR4 board.
b. Pulse width limited by maximum junction temperature.

SPECIFICATIONS T_A = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Limits**			**Unit**
			Min.	**Typ.[a]**	**Max.**	
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = - 10 µA	- 60			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 1		- 3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 10	µA
		V_{DS} = 0 V, V_{GS} = ± 10 V			± 200	nA
		V_{DS} = 0 V, V_{GS} = ± 10 V, T_J = 85 °C			± 500	
		V_{DS} = 0 V, V_{GS} = ± 5 V			± 100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 60 V, V_{GS} = 0 V			- 25	
		V_{DS} = - 60 V, V_{GS} = 0 V, T_J = 85 °C			- 250	
On-State Drain Current[a]	$I_{D(on)}$	V_{GS} = - 10 V, V_{DS} = - 4.5 V	- 50			mA
		V_{GS} = - 10 V, V_{DS} = - 10 V	- 600			
Drain-Source On-Resistance[a]	$R_{DS(on)}$	V_{GS} = - 4.5 V, I_D = - 25 mA		5		Ω
		V_{GS} = - 10 V, I_D = - 100 mA		4		
		V_{GS} = - 10 V, I_D = - 100 mA, T_J =125 °C			9	
Forward Transconductance[a]	g_{fs}	V_{DS} = - 10 V, I_D = - 100 mA	80			mS
Diode Forward Voltage	V_{SD}	I_S = - 100 mA, V_{GS} = 0 V			- 1.4	V
Dynamic						
Total Gate Charge	Q_g	V_{DS} = - 30 V, V_{GS} = - 15 V $I_D \cong$ - 100 mA		1.7		nC
Gate-Source Charge	Q_{gs}			0.26		
Gate-Drain Charge	Q_{gd}			0.46		
Input Capacitance	C_{iss}	V_{DS} = - 25 V, V_{GS} = 0 V f = 1 MHz		23		pF
Output Capacitance	C_{oss}			10		
Reverse Transfer Capacitance	C_{rss}			5		
Switching[b]						
Turn-On Time	$t_{d(on)}$	V_{DD} = - 25 V, R_L = 150 Ω $I_D \cong$ - 200 mA, V_{GEN} = - 10 V, R_g = 10 Ω		20		ns
Turn-Off Time	$t_{d(off)}$			35		

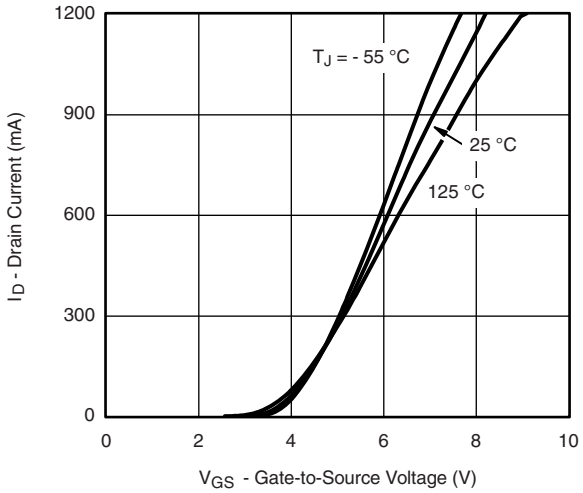
Notes:
a. Pulse test: PW ≤ 300 µs duty cycle ≤ 2 %.
b. Switching time is essentially independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

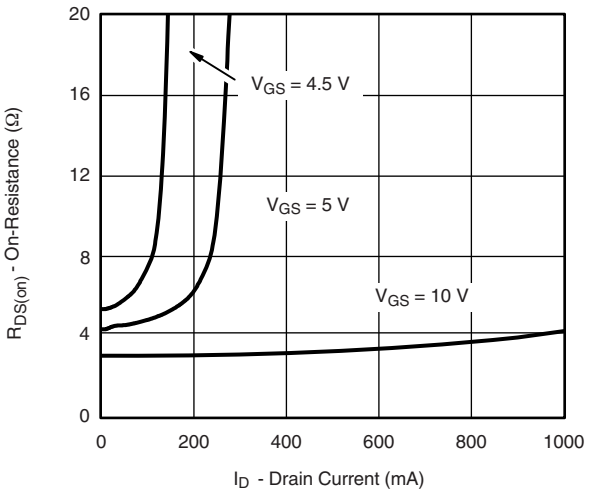
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



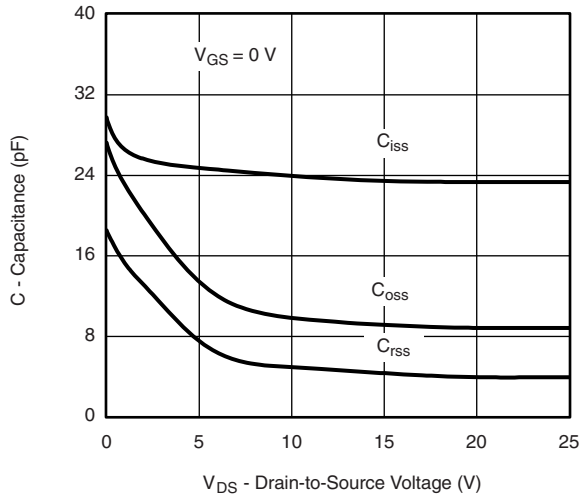
Output Characteristics



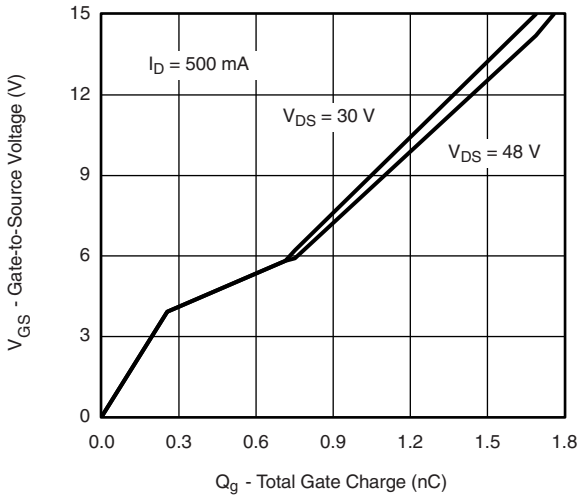
Transfer Characteristics



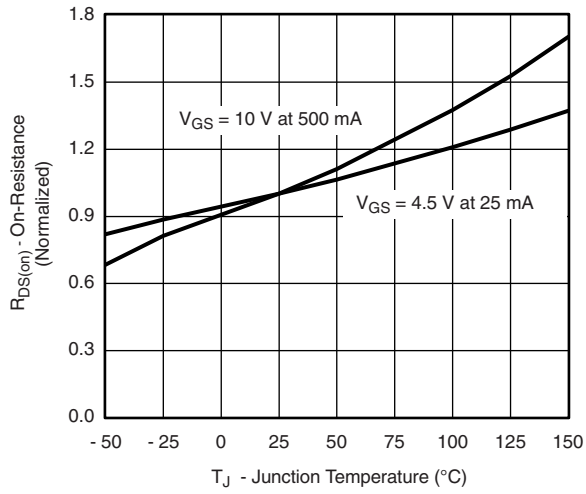
On-Resistance vs. Drain Current



Capacitance

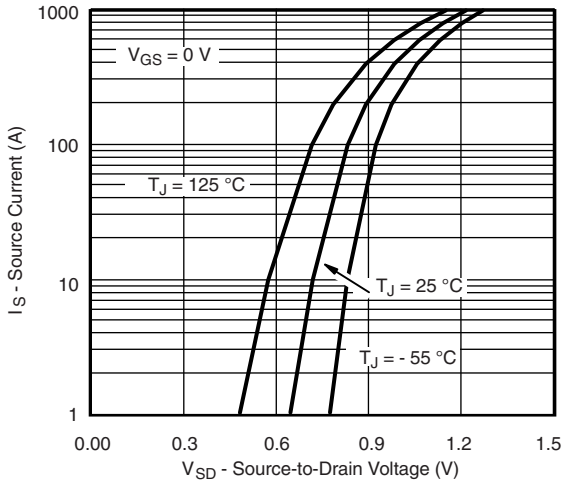


Gate Charge

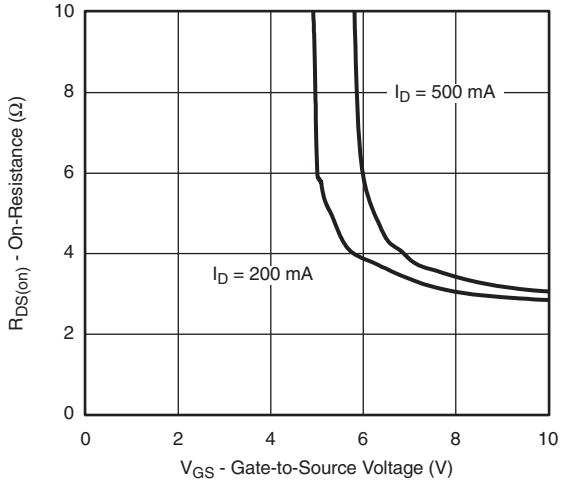


On-Resistance vs. Junction Temperature

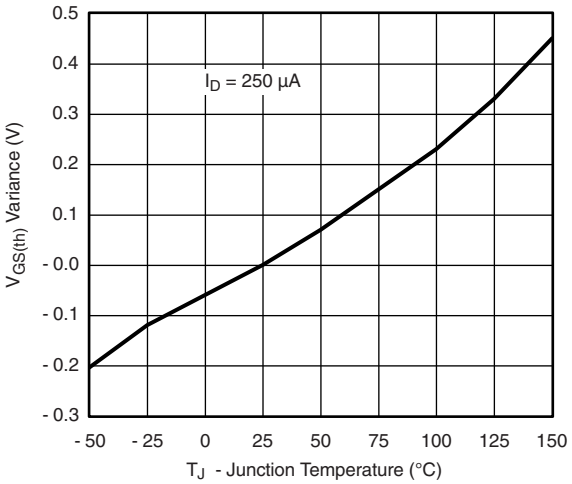
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



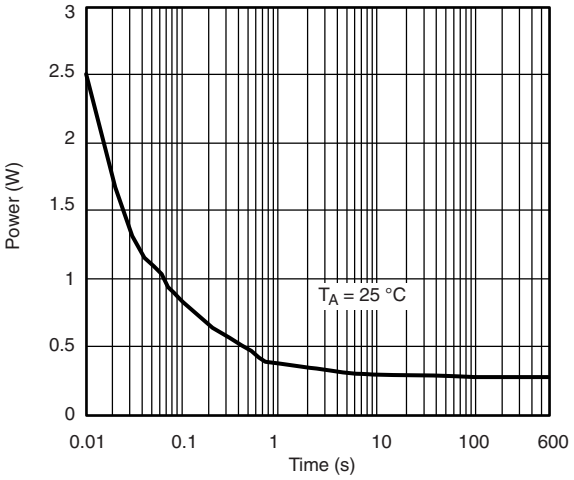
Source-Drain Diode Forward Voltage



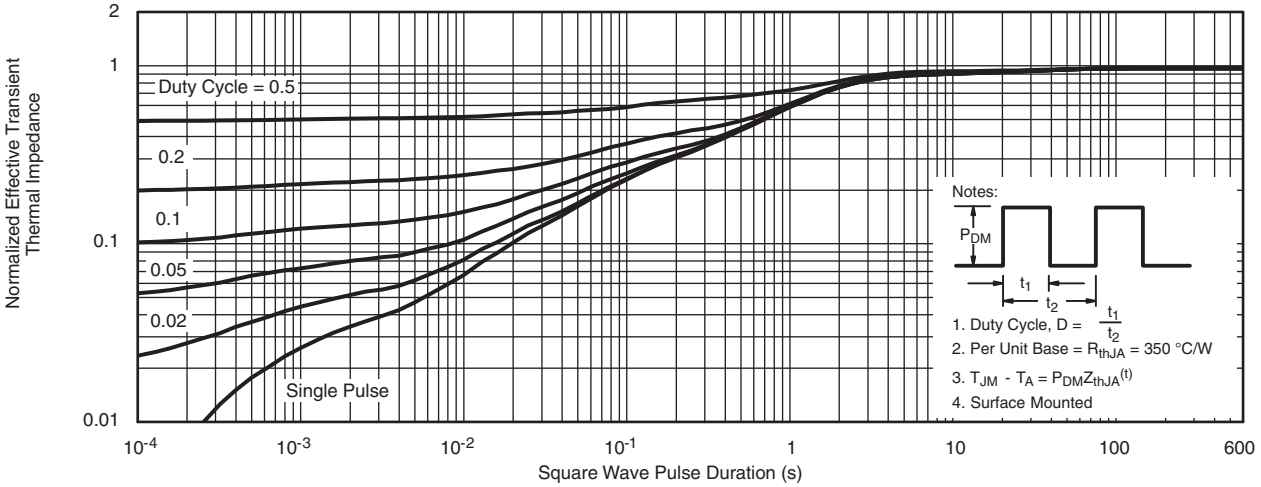
On-Resistance vs. Gate-Source Voltage



Threshold Voltage Variance Over Temperature

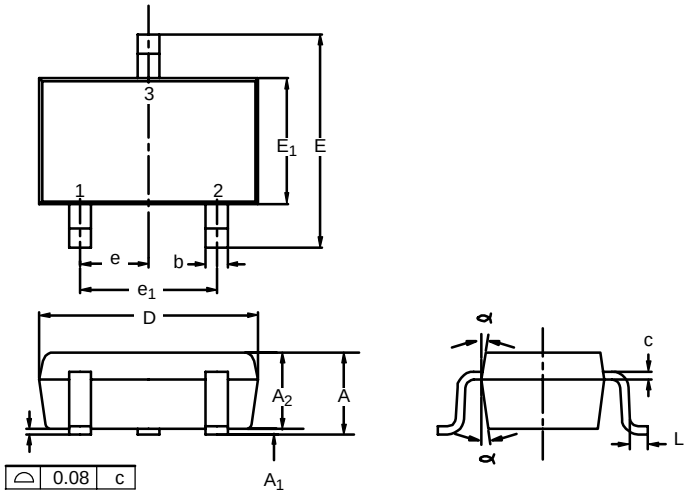


Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

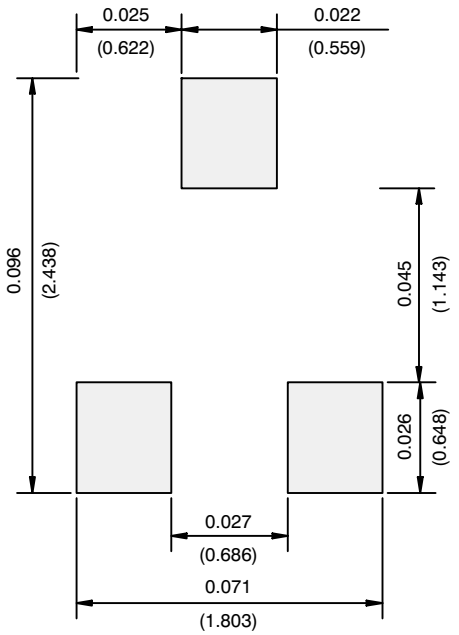
SC-70: 3-LEADS



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.90	–	1.10	0.035	–	0.043
A_1	–	–	0.10	–	–	0.004
A_2	0.80	–	1.00	0.031	–	0.039
b	0.25	–	0.40	0.010	–	0.016
c	0.10	–	0.25	0.004	–	0.010
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.80	2.10	2.40	0.071	0.083	0.094
E_1	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65BSC			0.026BSC		
e_1	1.20	1.30	1.40	0.047	0.051	0.055
L	0.10	0.20	0.30	0.004	0.008	0.012
α	7°Nom			7°Nom		

ECN: S-03946—Rev. C, 09-Jul-01
DWG: 5549

RECOMMENDED MINIMUM PADS FOR SC-70: 3-Lead



Recommended Minimum Pads
Dimensions in Inches/(mm)

Disclaimer

All products due to improve reliability, function or design or for other reasons, product specifications and data are subject to change without notice.

Taiwan VBsemi Electronics Co., Ltd., branches, agents, employees, and all persons acting on its or their representatives (collectively, the "Taiwan VBsemi"), assumes no responsibility for any errors, inaccuracies or incomplete data contained in the table or any other any disclosure of any information related to the product.(www.VBsemi.com)

Taiwan VBsemi makes no guarantee, representation or warranty on the product for any particular purpose of any goods or continuous production. To the maximum extent permitted by applicable law on Taiwan VBsemi relinquished: (1) any application and all liability arising out of or use of any products; (2) any and all liability, including but not limited to special, consequential damages or incidental ; (3) any and all implied warranties, including a particular purpose, non-infringement and merchantability guarantee.

Statement on certain types of applications are based on knowledge of the product is often used in a typical application of the general product VBsemi Taiwan demand that the Taiwan VBsemi of. Statement on whether the product is suitable for a particular application is non-binding. It is the customer's responsibility to verify specific product features in the products described in the specification is appropriate for use in a particular application. Parameter data sheets and technical specifications can be provided may vary depending on the application and performance over time. All operating parameters, including typical parameters must be made by customer's technical experts validated for each customer application. Product specifications do not expand or modify Taiwan VBsemi purchasing terms and conditions, including but not limited to warranty herein.

Unless expressly stated in writing, Taiwan VBsemi products are not intended for use in medical, life saving, or life sustaining applications or any other application. Wherein VBsemi product failure could lead to personal injury or death, use or sale of products used in Taiwan VBsemi such applications using client did not express their own risk. Contact your authorized Taiwan VBsemi people who are related to product design applications and other terms and conditions in writing.

The information provided in this document and the company's products without a license, express or implied, by estoppel or otherwise, to any intellectual property rights granted to the VBsemi act or document. Product names and trademarks referred to herein are trademarks of their respective representatives will be all.

Material Category Policy

Taiwan VBsemi Electronics Co., Ltd., hereby certify that all of the products are determined to be oHS compliant and meets the definition of restrictions under Directive of the European Parliament 2011/65 / EU, 2011 Nian. 6. 8 Ri Yue restrict the use of certain hazardous substances in electrical and electronic equipment (EEE) - modification, unless otherwise specified as inconsistent.(www.VBsemi.com)

Please note that some documents may still refer to Taiwan VBsemi RoHS Directive 2002/95 / EC. We confirm that all products identified as consistent with the Directive 2002/95 / EC European Directive 2011/65 /.

Taiwan VBsemi Electronics Co., Ltd. hereby certify that all of its products comply identified as halogen-free halogen-free standards required by the JEDEC JS709A. Please note that some Taiwanese VBsemi documents still refer to the definition of IEC 61249-2-21, and we are sure that all products conform to confirm compliance with IEC 61249-2-21 standard level JS709A.