

P-Channel SOT-323

These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry. Typical applications are dc-dc converters, load switching, power management in portable and battery-powered products such as computers, printers, cellular and cordless telephones.

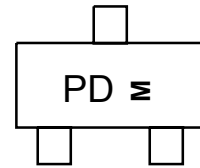
- Energy Efficient
- Miniature SOT-323 Surface Mount Package Saves Board Space
- **Pb-Free package is available**
RoHS product for packing code suffix "G"
Halogen free product for packing code suffix "H"



THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 3.) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (Note 4.) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300 2.4	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

Marking Diagram



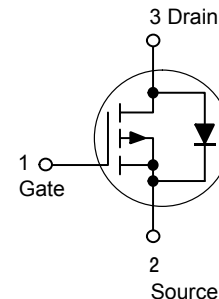
PD = Device Code
M = Month Code

ORDERING INFORMATION

Device	Package	Shipping
BSS84WT1	SOT-323	3000/Tape&Reel

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

Rating	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	50	V _{dc}
Gate-to-Source Voltage – Continuous	V_{GS}	± 20	V _{dc}
Drain Current			mA
– Continuous @ $T_A = 25^\circ\text{C}$	I_D	130	
– Pulsed Drain Current ($t_p \leq 10 \mu\text{s}$)	I_{DM}	520	
Total Power Dissipation @ $T_A = 25^\circ\text{C}$	P_D	225	mW
Operating and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	$^\circ\text{C}$
Thermal Resistance – Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T_L	260	$^\circ\text{C}$



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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain-to-Source Breakdown Voltage ($V_{GS} = 0 \text{ Vdc}, I_D = 250 \mu\text{Adc}$)	$V_{(BR)DSS}$	50	–	–	Vdc
Zero Gate Voltage Drain Current ($V_{DS} = 25 \text{ Vdc}, V_{GS} = 0 \text{ Vdc}$) ($V_{DS} = 50 \text{ Vdc}, V_{GS} = 0 \text{ Vdc}$) ($V_{DS} = 50 \text{ Vdc}, V_{GS} = 0 \text{ Vdc}, T_J = 125^\circ\text{C}$)	I_{DSS}	–	–	0.1 15 60	μAdc
Gate-Body Leakage Current ($V_{GS} = \pm 20 \text{ Vdc}, V_{DS} = 0 \text{ Vdc}$)	I_{GSS}	–	–	± 10	nAdc

ON CHARACTERISTICS (Note 1.)

Gate-Source Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1.0 \text{ mAdc}$)	$V_{GS(th)}$	0.8	–	2.0	Vdc
Static Drain-to-Source On-Resistance ($V_{GS} = 5.0 \text{ Vdc}, I_D = 100 \text{ mAdc}$)	$r_{DS(on)}$	–	5.0	10	Ohms
Transfer Admittance ($V_{DS} = 25 \text{ Vdc}, I_D = 100 \text{ mAdc}, f = 1.0 \text{ kHz}$)	$ y_{fs} $	50	–	–	mS

DYNAMIC CHARACTERISTICS

Input Capacitance	($V_{DS} = 5.0 \text{ Vdc}$)	C_{iss}	–	30	–	pF
Output Capacitance	($V_{DS} = 5.0 \text{ Vdc}$)	C_{oss}	–	10	–	
Transfer Capacitance	($V_{DG} = 5.0 \text{ Vdc}$)	C_{rss}	–	5.0	–	

SWITCHING CHARACTERISTICS (Note 2.)

Turn-On Delay Time	$(V_{DD} = -15 \text{ Vdc}, I_D = -2.5 \text{ Adc}, R_L = 50 \Omega)$	$t_{d(on)}$	–	2.5	–	ns
Rise Time		t_r	–	1.0	–	
Turn-Off Delay Time		$t_{d(off)}$	–	16	–	
Fall Time		t_f	–	8.0	–	
Gate Charge		Q_T	–	6000	–	

SOURCE-DRAIN DIODE CHARACTERISTICS

Continuous Current	I_S	–	–	0.130	A
Pulsed Current	I_{SM}	–	–	0.520	
Forward Voltage (Note 2.)	V_{SD}	–	2.5	–	V

1. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.
2. Switching characteristics are independent of operating junction temperature.

TYPICAL ELECTRICAL CHARACTERISTICS

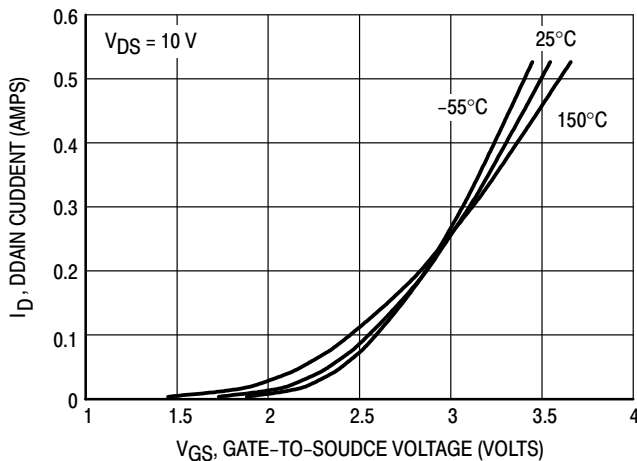


Figure 1. Transfer Characteristics

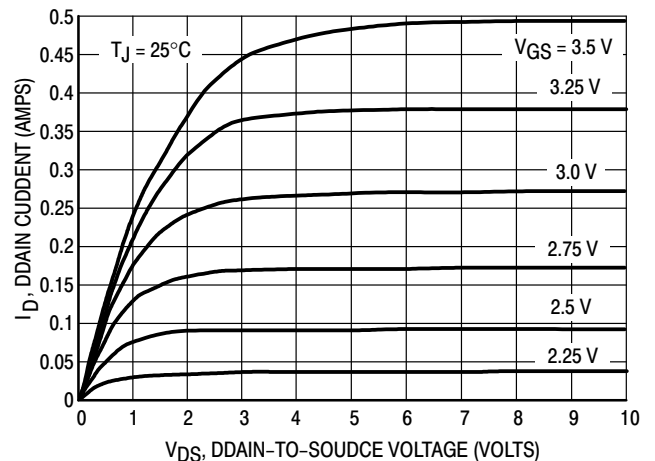


Figure 2. On-Region Characteristics

TYPICAL ELECTRICAL CHARACTERISTICS

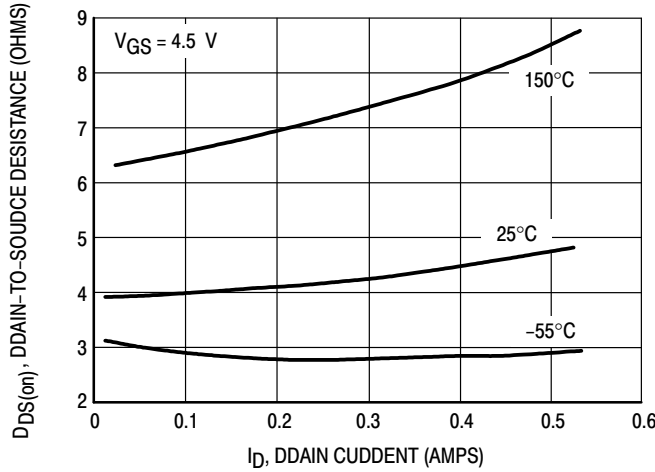


Figure 3. On-Resistance versus Drain Current

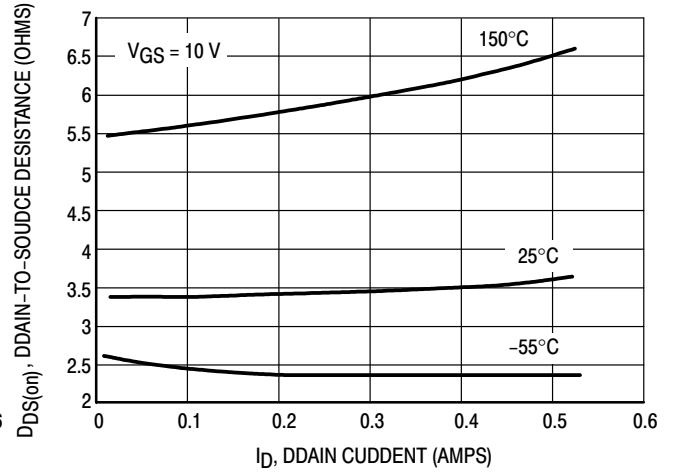


Figure 4. On-Resistance versus Drain Current

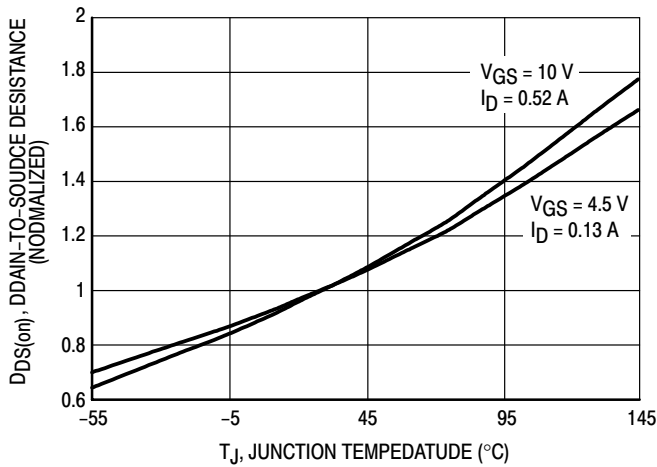


Figure 5. On-Resistance Variation with Temperature

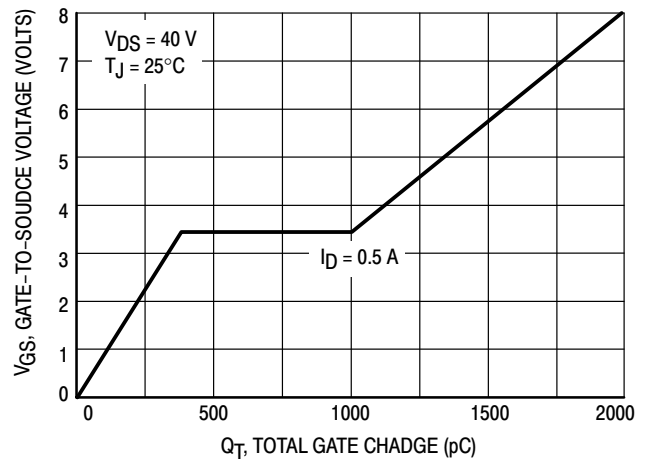


Figure 6. Gate Charge

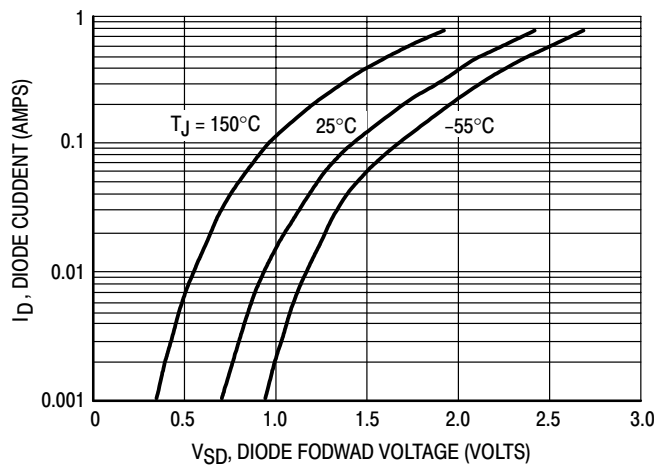
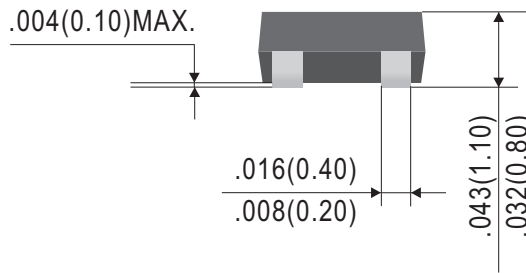
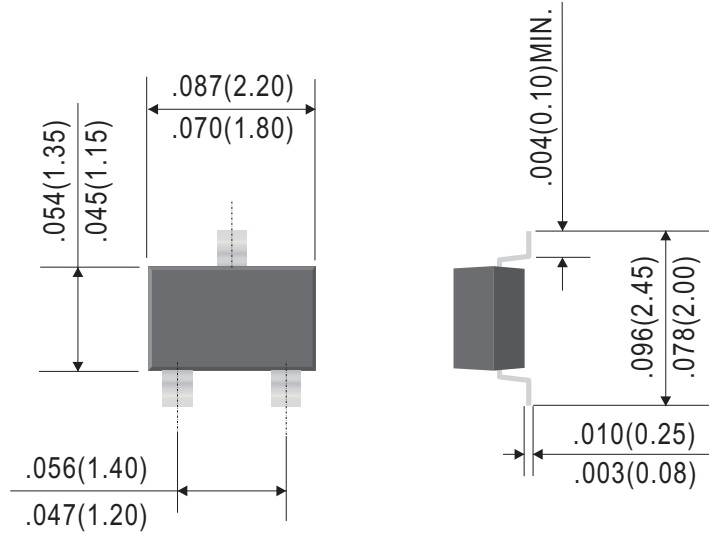


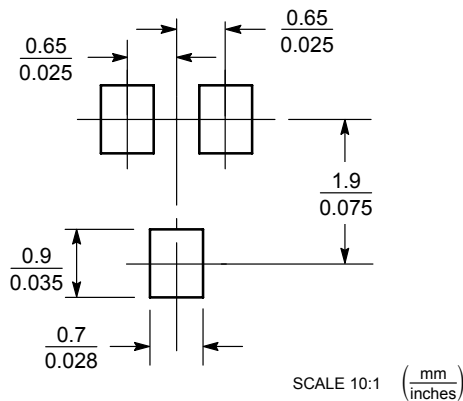
Figure 7. Body Diode Forward Voltage

SOT-323

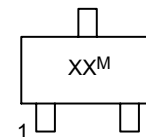


Dimensions in inches and (millimeters)

SOLDERING FOOTPRINT*



GENERIC MARKING DIAGRAM



- XX = Specific Device Code
- M = Date Code
- = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.