DATA SHEET

SEMICONDUCTOR
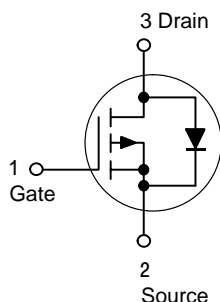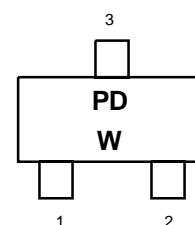
BSS84

Power MOSFET
130 mAmps, 50 Volts
P–Channel SOT–23

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–23 Surface Mount Package Saves Board Space
- Pb-Free Package is available.

SOT –23

Marking Diagram

W = Work Week

ORDERING INFORMATION

Device	Package	Minimum Q'ty
BSS84	SOT-23	3000/TR

MAXIMUM RATINGS (T$_J$ = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain–to–Source Voltage	V_{DSS}	50	Vdc
Gate–to–Source Voltage – Continuous	V_{GS}	± 20	Vdc
Drain Current – Continuous @ T$_A$ = 25°C – Pulsed Drain Current (t$_p$ ≤ 10 µs)	I_D I_{DM}	130 520	mA
Total Power Dissipation @ T$_A$ = 25°C	P_D	225	mW
Operating and Storage Temperature Range	T$_J$, T$_{stg}$	– 55 to 150	°C
Thermal Resistance – Junction–to–Ambient	$R_{\theta JA}$	556	°C/W
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T$_L$	260	°C

DEVICE CHARACTERISTICS

BSS84

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain–to–Source Breakdown Voltage (V_{GS} = 0 Vdc, I_D = 250 µAdc)	$V_{(BR)DSS}$	50	–	–	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 25 Vdc, V_{GS} = 0 Vdc) (V_{DS} = 50 Vdc, V_{GS} = 0 Vdc) (V_{DS} = 50 Vdc, V_{GS} = 0 Vdc, T_J = 125°C)	I_{DSS}	– – –	– – –	0.1 15 60	µAdc
Gate–Body Leakage Current (V_{GS} = ± 20 Vdc, V_{DS} = 0 Vdc)	I_{GSS}	–	–	±60	µAdc
ON CHARACTERISTICS (Note 1.)					
Gate–Source Threaded Voltage (V_{DS} = V_{GS}, I_D = 1.0 mAdc)	$V_{GS(th)}$	0.8	–	2.0	Vdc
Static Drain–to–Source On–Resistance (V_{GS} = 5.0 Vdc, I_D = 100 mAdc)	$r_{DS(on)}$	–	5.0	10	Ohms
Transfer Admittance (V_{DS} = 25 Vdc, I_D = 100 mAdc, f = 1.0 kHz)	$|y_{fs}|$	50	–	–	mS
DYNAMIC CHARACTERISTICS					
Input Capacitance	(V_{DS} = 5.0 Vdc)	C_{iss}	–	30	–	pF
Output Capacitance	(V_{DS} = 5.0 Vdc)	C_{oss}	–	10	–	
Transfer Capacitance	(V_{DG} = 5.0 Vdc)	C_{rss}	–	5.0	–	
SWITCHING CHARACTERISTICS (Note 2.)					
Turn–On Delay Time		$t_{d(on)}$	–	2.5	–	ns
Rise Time	(V_{DD} = −15 Vdc, I_D = −2.5 Adc, R_L = 50 Ω)	t_r	–	1.0	–	
Turn–Off Delay Time		$t_{d(off)}$	–	16	–	
Fall Time		t_f	–	8.0	–	
Gate Charge		Q_T	–	6000	–	pC
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 ≤ 300 µs, Duty Cycle ≤ 2%.
2. Switching characteristics are independent of operating junction temperature.
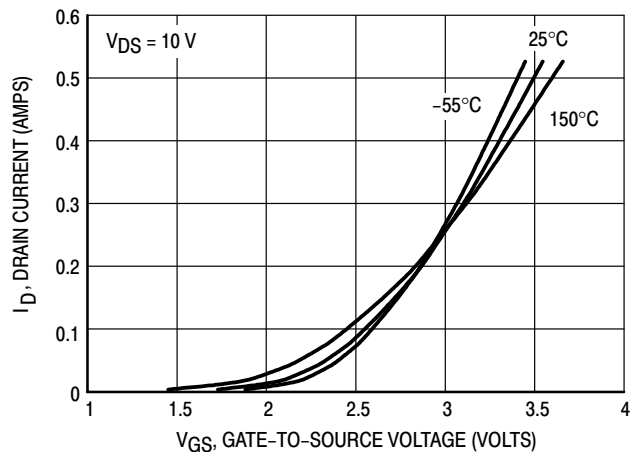
TYPICAL ELECTRICAL CHARACTERISTICS
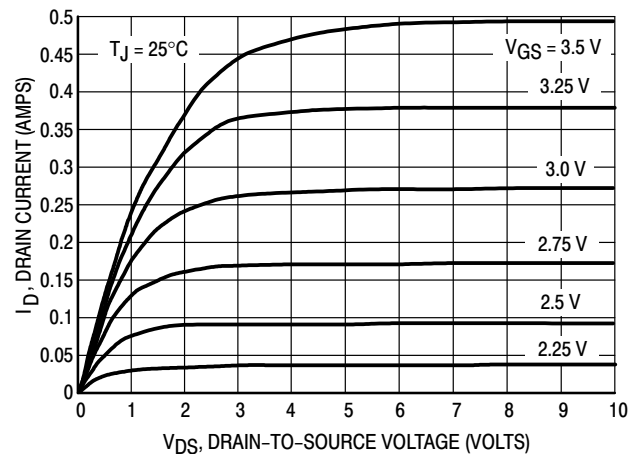

Figure 1. Transfer Characteristics

Figure 2. On–Region Characteristics

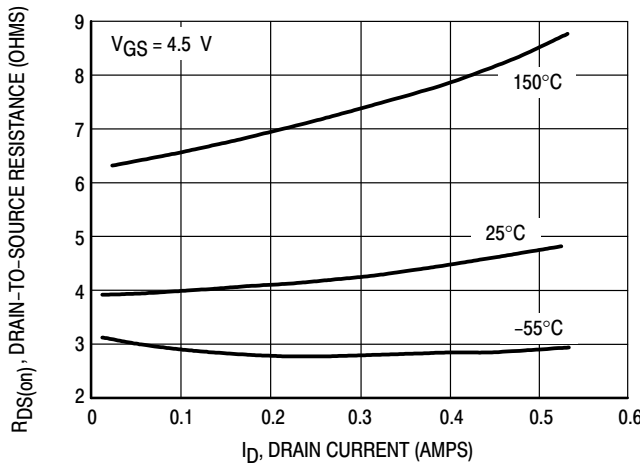# DEVICE CHARACTERISTICS

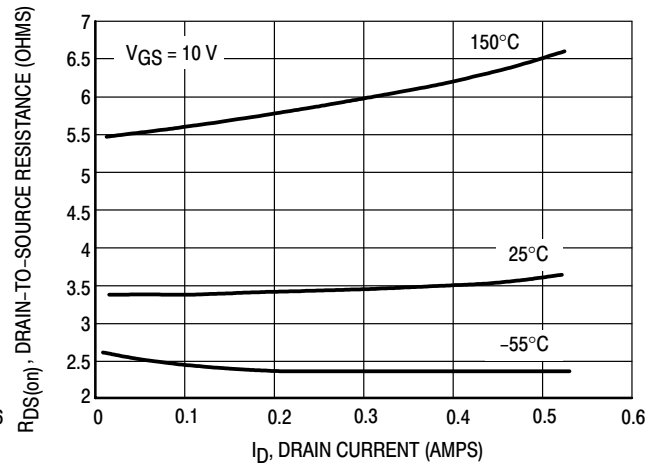## BSS84

Figure 3. On–Resistance versus Drain Current

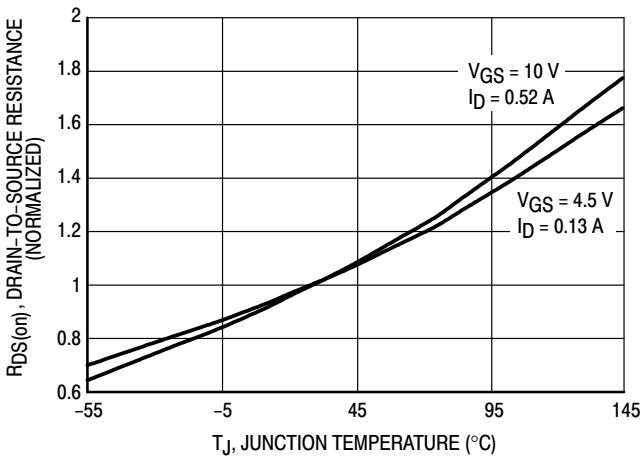Figure 4. On–Resistance versus Drain Current

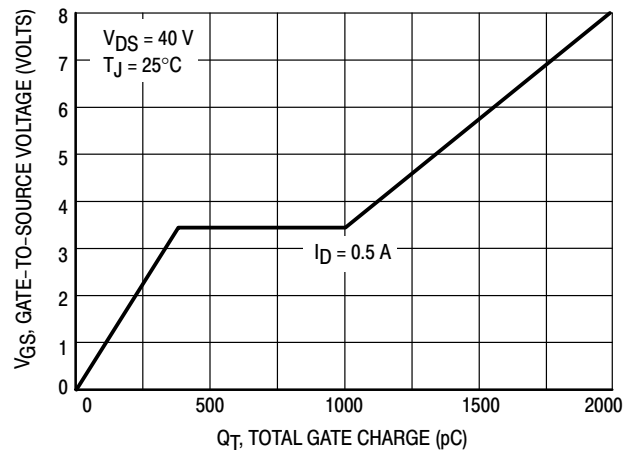Figure 5. On–Resistance Variation with Temperature

Figure 6. Gate Charge
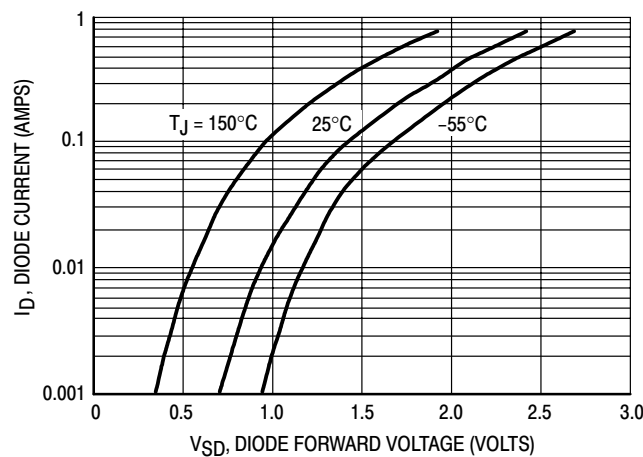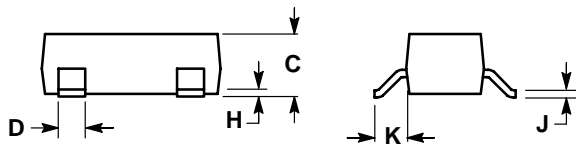
Figure 7. Body Diode Forward Voltage
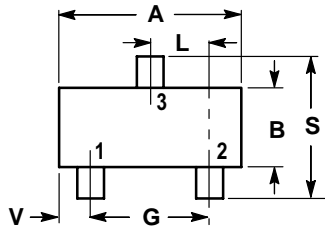
PACKAGE OUTLINE & DIMENSIONS

BSS84

SOT−23

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

PIN 1. BASE
    2. EMITTER
    3. COLLECTOR

$\frac{0.037}{0.95}$

$\frac{0.037}{0.95}$

$\frac{0.079}{2.0}$

$\frac{0.035}{0.9}$

$\frac{0.031}{0.8}$

$\left(\frac{inches}{mm} \right)$