

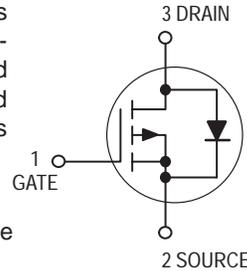


Low $r_{DS(on)}$ Small-Signal MOSFETs TMOS Single P-Channel Field Effect Transistors

Part of the Greenline™ Portfolio of devices with energy-conserving traits.

These miniature surface mount MOSFETs utilize Motorola's High Cell Density, HDTMOS process. Reduced power loss conserves 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.

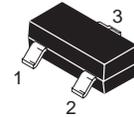
- Energy Efficient
- Miniature SOT-23 Surface Mount Package Saves Board Space



BSS84LT1

Motorola Preferred Device

**P-CHANNEL
ENHANCEMENT-MODE
TMOS MOSFET**



**CASE 318-08, Style 21
SOT-23 (TO-236AB)**

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ 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 @ $T_A = 25^\circ\text{C}$ — Pulsed Drain Current ($t_p \leq 10 \mu\text{s}$)	I_D I_{DM}	130 520	mA
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	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T_L	260	$^\circ\text{C}$

DEVICE MARKING

BSS84LT1 = PD

ORDERING INFORMATION

Device	Reel Size	Tape Width	Quantity
BSS84LT1	7"	8mm embossed tape	3000
BSS84LT3	13"	8mm embossed tape	10,000

Preferred devices are Motorola recommended choices for future use and best overall value.

BSS84LT1

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

Characteristic	Symbol	Min	Typ	Max	Unit
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(1)

Gate-Source Threshold 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(2)

Turn-On Delay Time	(V _{DD} = -15 Vdc, I _D = -2.5 Adc, R _L = 50 Ω)	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	—	pC

SOURCE-DrAIN DIODE CHARACTERISTICS

Continuous Current	I _S	—	—	0.130	A
Pulsed Current	I _{SM}	—	—	0.520	
Forward Voltage(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

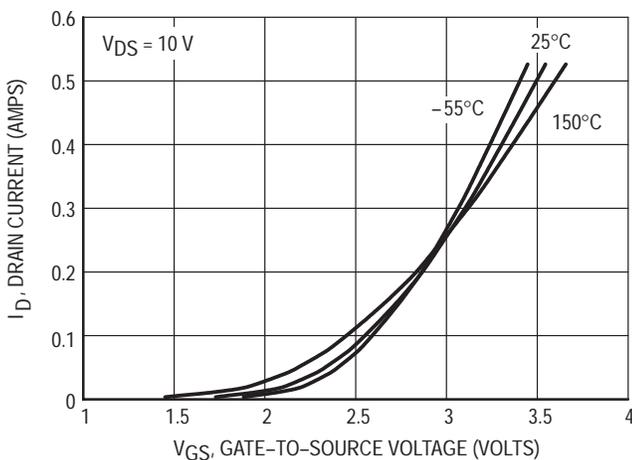


Figure 1. Transfer Characteristics

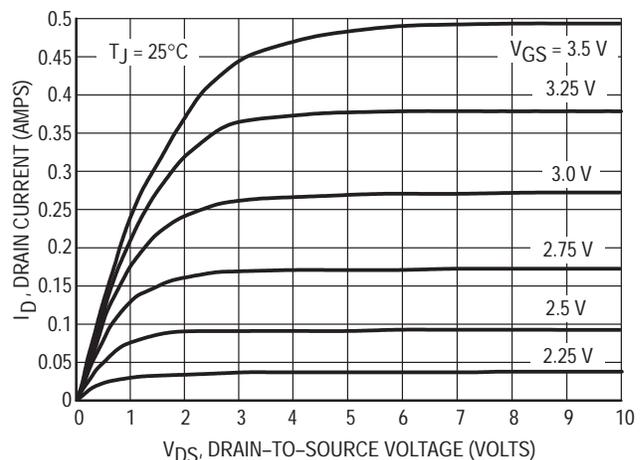


Figure 2. On-Region Characteristics

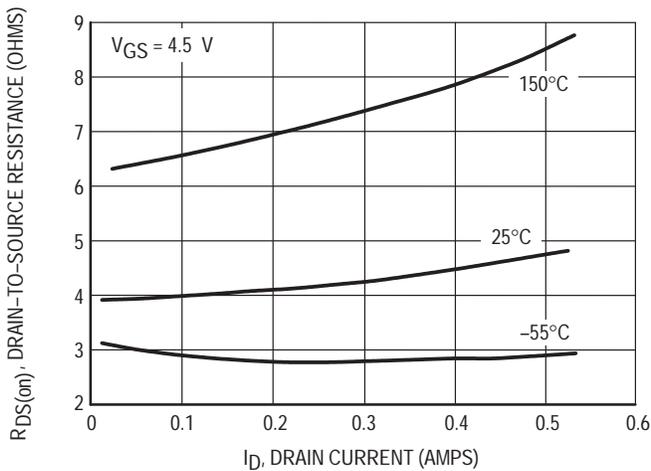


Figure 3. On-Resistance versus Drain Current

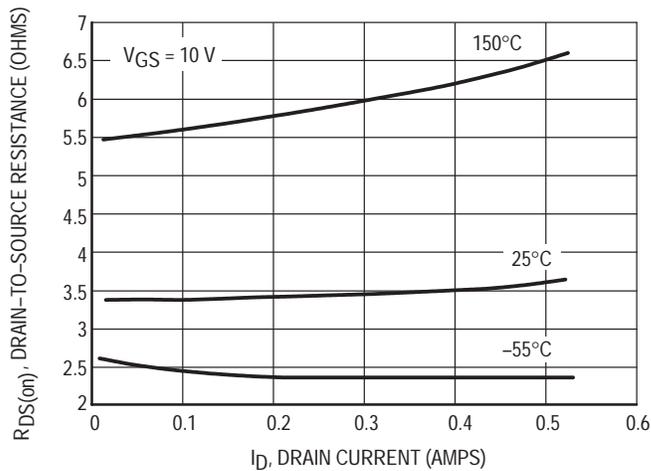


Figure 4. On-Resistance versus Drain Current

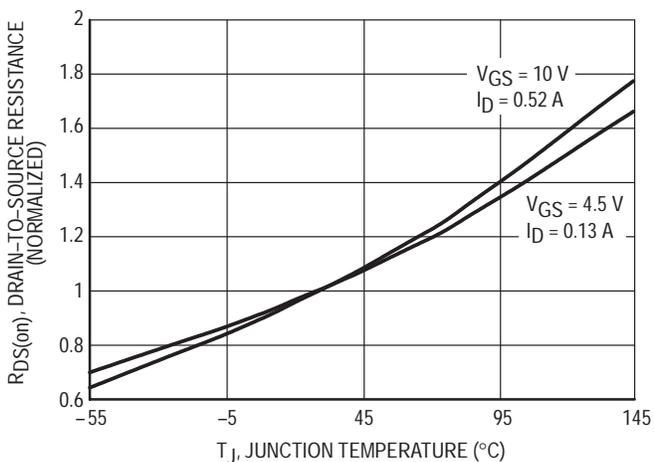


Figure 5. On-Resistance Variation with Temperature

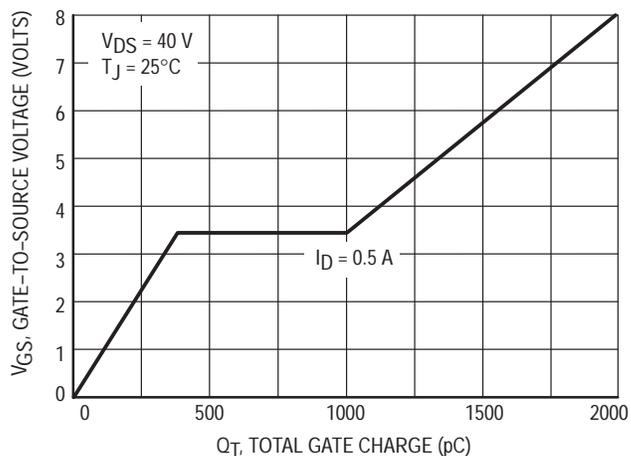


Figure 6. Gate Charge

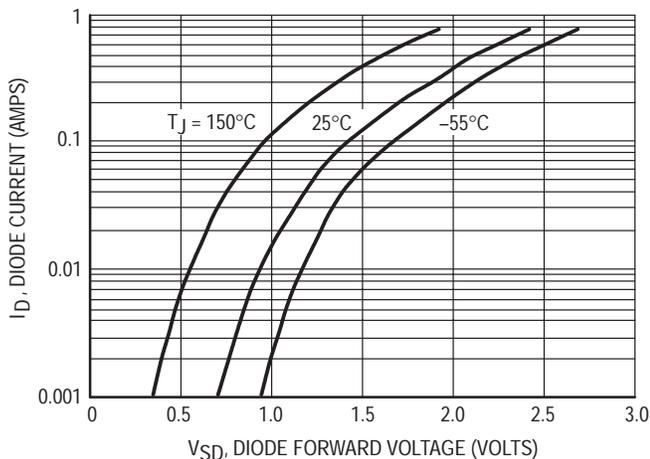


Figure 7. Body Diode Forward Voltage