GREEN LINE™

Preliminary Information

MGSF3441XT1

Motorola Preferred Device

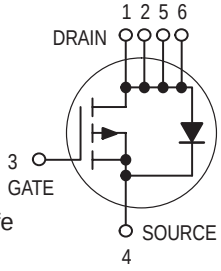
Low $r_{DS(on)}$ Small-Signal MOSFETs TMOS Single P-Channel Field Effect Transistors

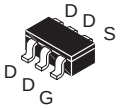
P–CHANNEL ENHANCEMENT–MODE TMOS MOSFET
$r_{DS(on)}$ = 78 mΩ (TYP)

Part of the GreenLine™ Portfolio of devices with energy–conserving traits.

These miniature surface mount MOSFETs utilize Motorola's High Cell Density, HDTMOS process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in small power management circuitry. Typical applications are dc–dc converters, power management in portable and battery–powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low $r_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Miniature TSOP 6 Surface Mount Package Saves Board Space
- Visit our Web Site at http://www.mot–sps.com/ospd





CASE 318G–02, Style 1
TSOP 6 PLASTIC

2.5V RATED

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain–to–Source Voltage	V_{DSS}	20	Vdc
Gate–to–Source Voltage — Continuous	V_{GS}	± 8.0	Vdc
Drain Current — Continuous @ T_A = 25°C — Pulsed Drain Current ($t_p \le 10$ μs)	I_D I_{DM}	1.5 20	A
Total Power Dissipation @ T_A = 25°C	P_D	950	mW
Operating and Storage Temperature Range	T_J, T_{stg}	– 55 to 150	°C
Thermal Resistance — Junction–to–Ambient	$R_{\theta JA}$	132	°C/W
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T_L	260	°C

ORDERING INFORMATION

Device	Reel Size	Tape Width	Quantity
MGSF3441XT1	7″	8 mm embossed tape	3000
MGSF3441XT3	13″	8 mm embossed tape	10,000

This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.

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

REV 2

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 = 10 μA)		$V_{(BR)DSS}$	20	—	—	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 20 Vdc, V_{GS} = 0 Vdc) (V_{DS} = 20 Vdc, V_{GS} = 0 Vdc, T_J = 70°C)		I_{DSS}	— —	— —	1.0 4.0	μAdc
Gate–Body Leakage Current (V_{GS} = ± 8.0 Vdc, V_{DS} = 0)		I_{GSS}	—	—	±100	nAdc
ON CHARACTERISTICS(1)						
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 250 μAdc)		$V_{GS(th)}$	0.45	—	—	Vdc
Static Drain–to–Source On–Resistance (V_{GS} = 4.5 Vdc, I_D = 1.5 A) (V_{GS} = 2.5 Vdc, I_D = 1.2 A)		$r_{DS(on)}$	— —	0.078 0.110	0.100 0.135	Ohms
DYNAMIC CHARACTERISTICS						
Input Capacitance	(V_{DS} = 5.0 V)	C_{iss}	—	90	—	pF
Output Capacitance	(V_{DS} = 5.0 V)	C_{oss}	—	50	—	
Transfer Capacitance	(V_{DG} = 5.0 V)	C_{rss}	—	10	—	
SWITCHING CHARACTERISTICS(2)						
Turn–On Delay Time	(V_{DD} = 15 Vdc, I_D = 1.0 A, V_{GEN} = 10 V, R_L = 10 Ω)	$t_{d(on)}$	—	27	50	ns
Rise Time		t_r	—	17	30	
Turn–Off Delay Time		$t_{d(off)}$	—	52	80	
Fall Time		t_f	—	45	70	
Gate Charge		Q_T	—	3000	—	pC
SOURCE–DRAIN DIODE CHARACTERISTICS						
Continuous Current		I_S	—	—	1.0	A
Pulsed Current		I_{SM}	—	—	20	A
Forward Voltage(2)		V_{SD}	—	0.80	1.2	V

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
(2) Switching characteristics are independent of operating junction temperature.