

## P-Channel MOSFET

### Power MOSFET 130 mAmps, 50 Volts P-Channel SOT-23

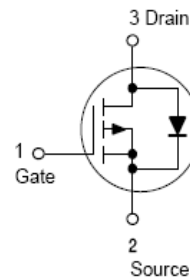
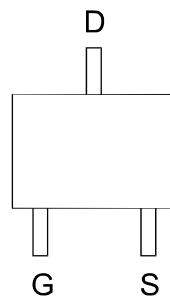
These miniature surface mount MOSFETs reduce power loss conserve energy, making this device ideal for use in small power management circuitry. Typical applications are dc-dc converters, load switching, power management in portable and battery-powered products such as computers, printers, cellular and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

- Energy Efficient
- Miniature SOT-23 Surface Mount Package Saves Board Space
- Pb-Free Package is available.

#### PIN CONFIGURATION

(SOT-23)

Top View



#### MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>	50	V <sub>dc</sub>
Gate-to-Source Voltage – Continuous	V <sub>GS</sub>	±20	V <sub>dc</sub>
Drain Current			mA
– Continuous @ T <sub>A</sub> = 25°C	I <sub>D</sub>	130	
– Pulsed Drain Current (t <sub>p</sub> ≤ 10 μs)	I <sub>DM</sub>	520	
Total Power Dissipation @ T <sub>A</sub> = 25°C	P <sub>D</sub>	225	mW
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	– 55 to 150	°C
Thermal Resistance – Junction-to-Ambient	R <sub>θJA</sub>	556	°C/W
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T <sub>L</sub>	260	°C

## P-Channel MOSFET

### 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	$\mu\text{Adc}$
Gate-Body Leakage Current ( $V_{GS} = \pm 20\text{ Vdc}$ , $V_{DS} = 0\text{ Vdc}$ )	$I_{GSS}$	-	-	$\pm 60$	$\mu\text{Adc}$

#### 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	-	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  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
2. Switching characteristics are independent of operating junction temperature.

### TYPICAL ELECTRICAL CHARACTERISTICS

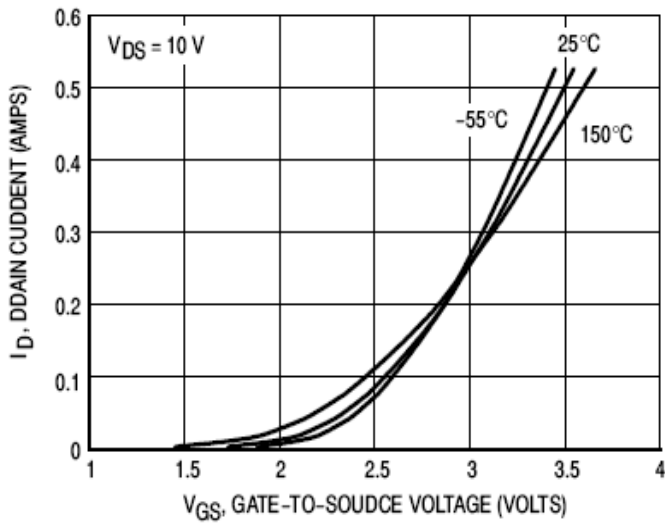


Figure 1. Transfer Characteristics

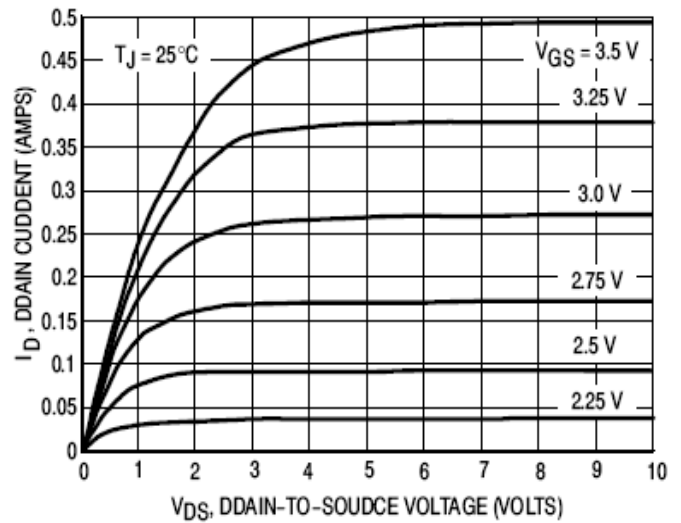


Figure 2. On-Region Characteristics

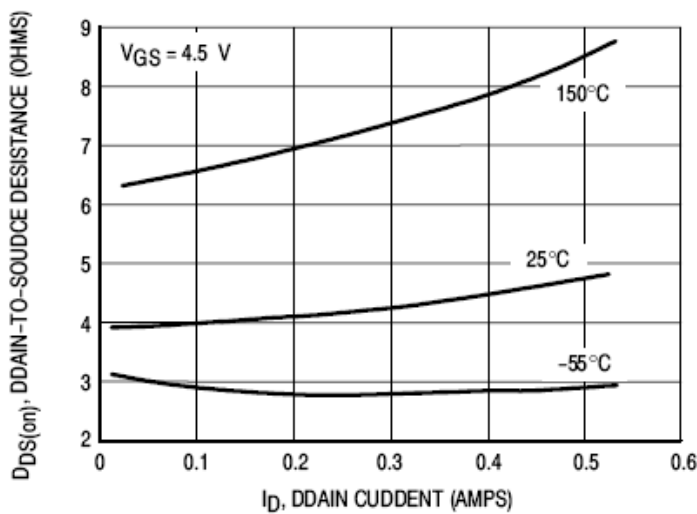


Figure 3. On-Resistance versus Drain Current

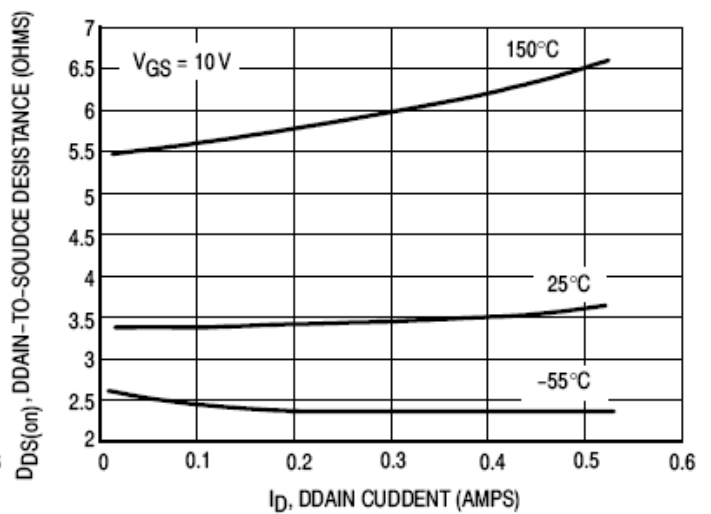


Figure 4. On-Resistance versus Drain Current

### TYPICAL ELECTRICAL CHARACTERISTICS

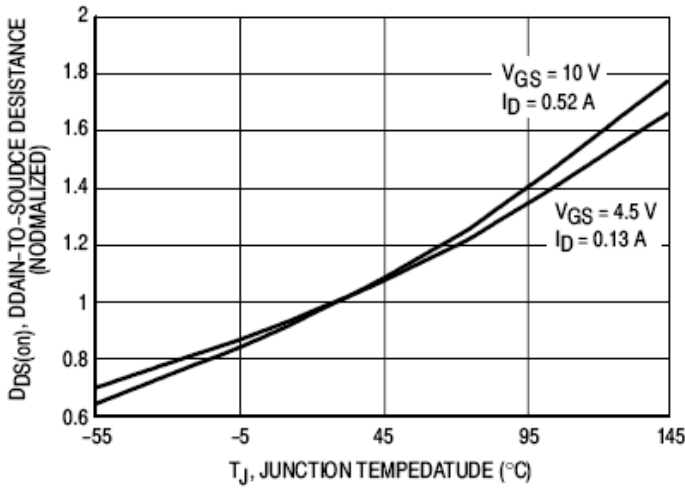


Figure 5. On-Resistance Variation with Temperature

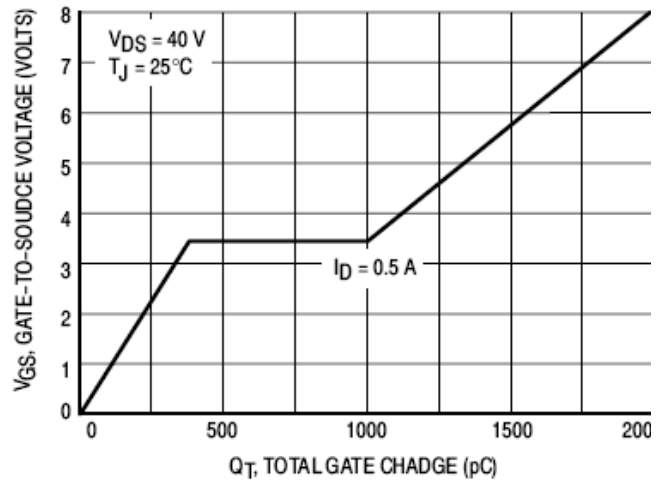


Figure 6. Gate Charge

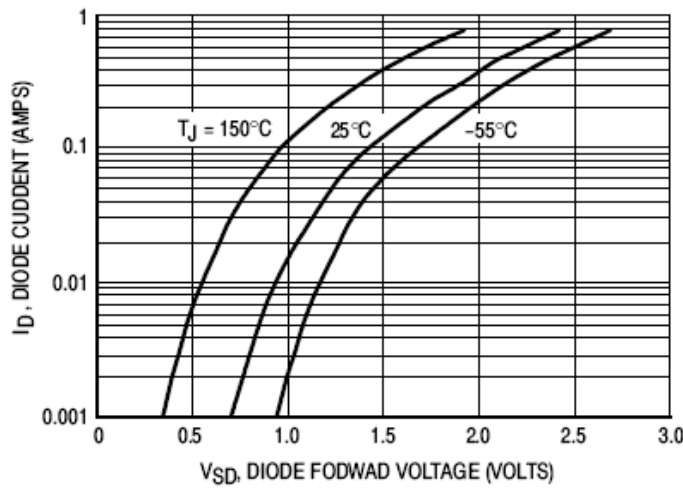
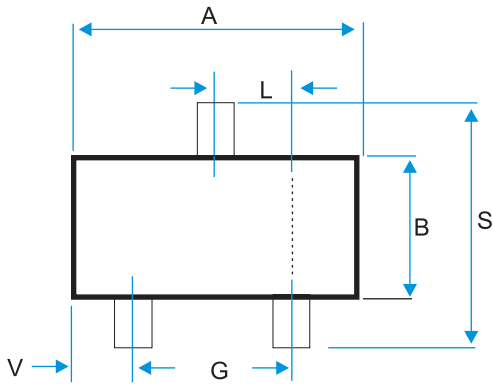
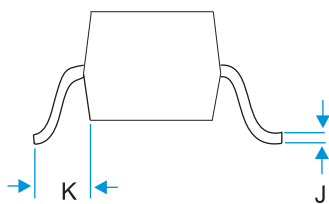
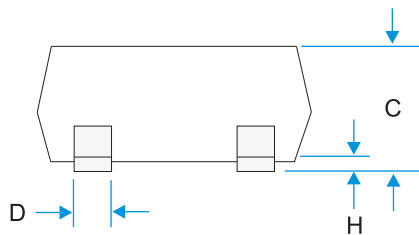


Figure 7. Body Diode Forward Voltage

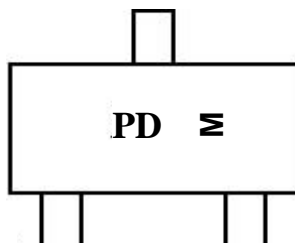
### SOT-23 Package Outline



DIM	MILLIMETERS	
	MIN	MAX
A	2.70	3.1
B	1.20	1.6
C	0.9	1.3
D	0.35	0.50
G	1.70	2.10
H	0.013	0.15
J	0.085	0.2
K	0.45	0.7
L	0.89	1.02
S	2.20	2.80
V	0.45	0.60



P-Channel MOSFET  
 Device name:MESS84  
 Package:SOT-23  
 Marking Code:



PD: Device Marking Code  
 M: Date code

### MONTH CODE

#### ODD YEARS(2007,2009)

Jan	1
Feb	2
Mar	3
Apr	4
May	5
Jun	6
Jul	7
Aug	8
Sep	9
Oct	T
Nov	V
Dec	C

#### EVEN YEARS(2006,2008)

Jan	E
Feb	F
Mar	H
Apr	J
May	K
Jun	L
Jul	N
Aug	P
Sep	U
Oct	X
Nov	Y
Dec	Z