

WPM4801

P-Channel Enhancement Mode MOSFET

www.willsemi.com

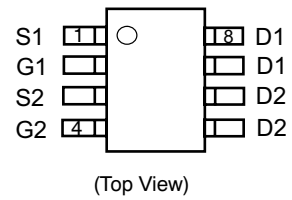
Description

The WPM4801 is the Dual P-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

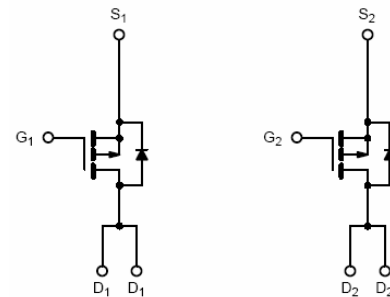
These devices are particularly suited for low voltage application , notebook computer power management and other battery powered circuits where high-side switching .

PIN CONNECTIONS



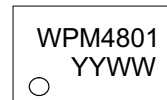
Features

- -30V/-5.0A, $R_{DS(ON)} = 37m\Omega @ V_{GS} = -10V$
- -30V/-4.0A, $R_{DS(ON)} = 45m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP – 8P package design



Application

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter



YYWW = Date Code
WPM4801 = Specific Device Code

Marking Diagram and explain

Order information

Part Number	Part Number	Shipping
WPM4801-8/TR	SOP-8P	2500Tape&Reel

Pin Assignment

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

Absolute Maximum Ratings

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V_{DSS}	-30	V
Gate –Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_D	$T_A=25^{\circ}\text{C}$	-5.6
		$T_A=70^{\circ}\text{C}$	-4.5
Pulsed Drain Current	I_{DM}	-30	A
Continuous Source Current(Diode Conduction)	I_S	-2.3	A
Power Dissipation	P_D	$T_A=25^{\circ}\text{C}$	2.0
		$T_A=70^{\circ}\text{C}$	1.2
Operating Junction Temperature	T_J	-55/150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C}/\text{W}$

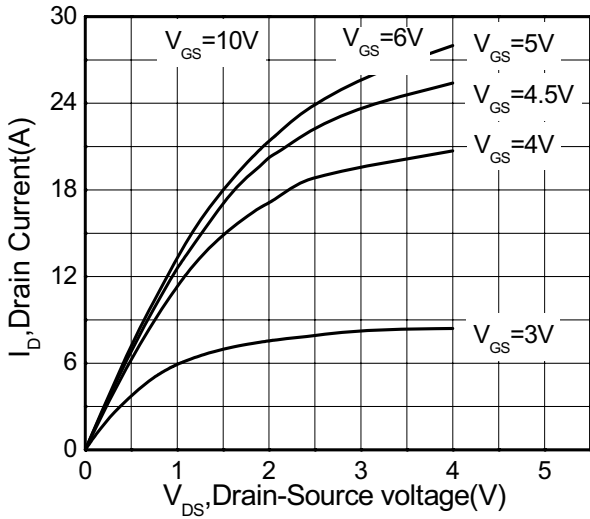
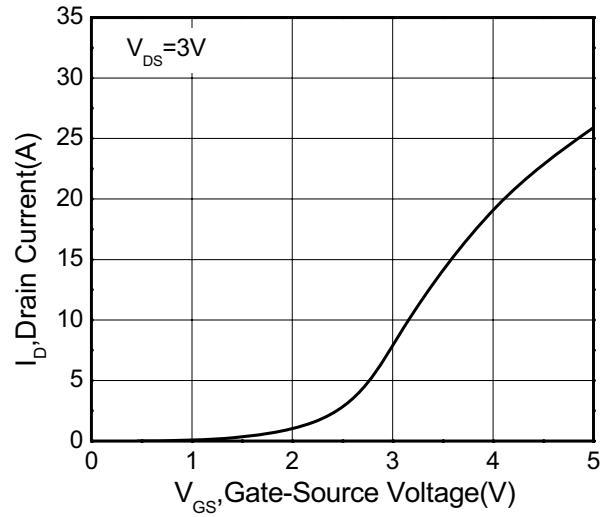
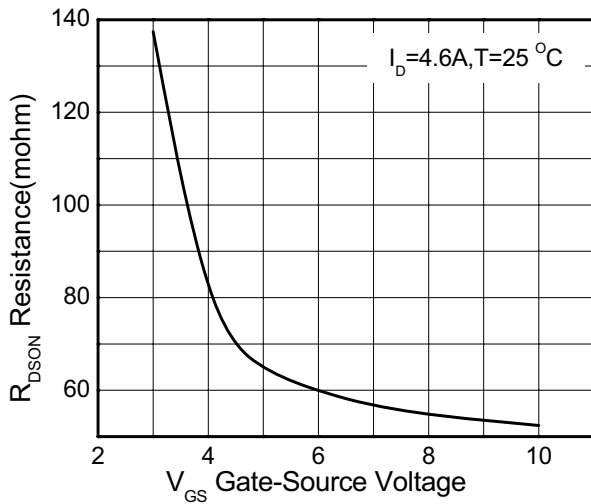
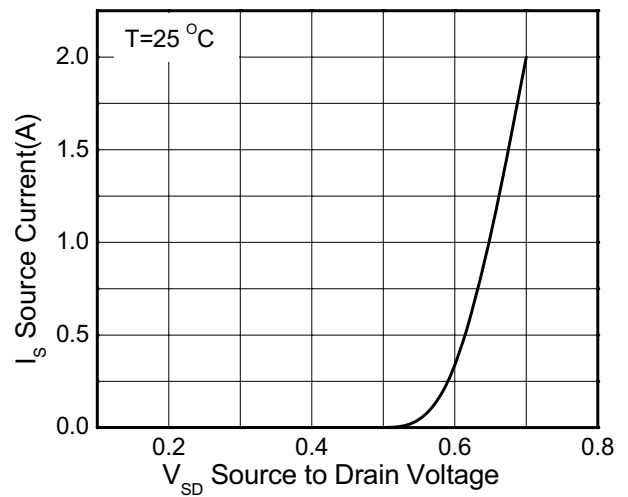
Electrical Characteristics

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

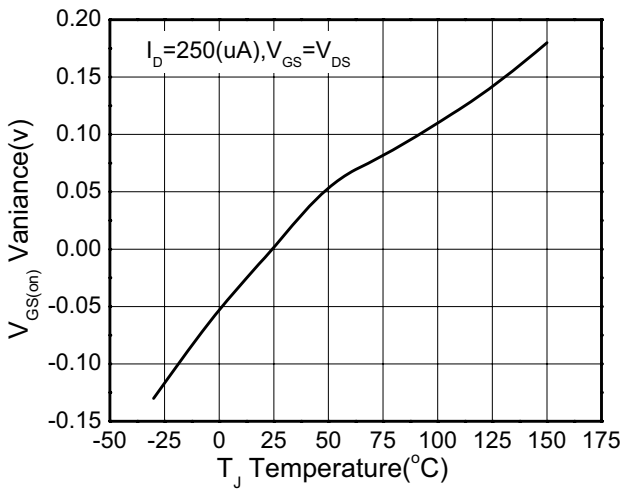
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.6	-1.0	-1.4	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1	uA
		$V_{DS}=-24V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			-10	
On-State Drain Current	$I_{D(on)}$	$V_{DS}=-5V, V_{GS}=-10V$	-25			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5.0A$	0.030	0.037	0.050	Ω
		$V_{GS}=-4.5V, I_D=-4.0A$	0.036	0.045	0.060	
Forward Transconductance	g_{fs}	$V_{DS}=-5V, I_D=-4.3A$		12		S
Diode Forward Voltage	V_{SD}	$I_S=-1.0A, V_{GS}=0V$		-0.75	-1.5	V

Dynamic

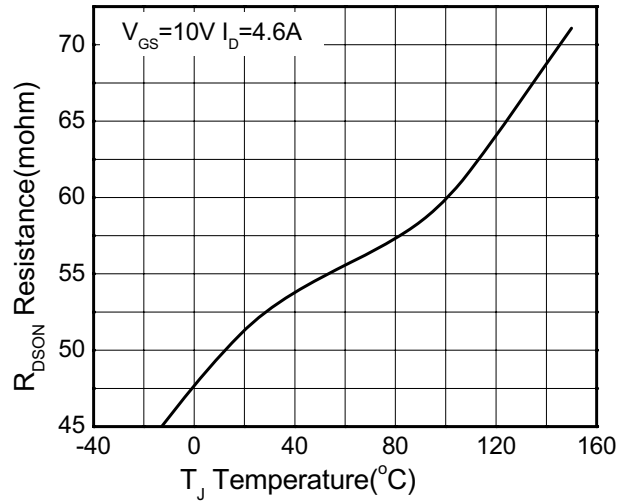
Total Gate Charge	Q_g	$V_{DS}=-15V, V_{GS}=-10V$ $I_D=-4.3A$		10	15	nC
Gate-Source Charge	Q_{gs}			3.4		
Gate-Drain Charge	Q_{gd}			1.7		
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V$ $f=1\text{MHz}$		560		pF
Output Capacitance	C_{oss}			100		
Reverse Transfer Capacitance	C_{rss}			67		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=15\Omega$ $I_D=-1.0A, V_{GEN}=-10V$ $R_G=6\Omega$		7	15	nS
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			40	80	
	t_f			20	40	

Typical Characteristics

Drain Current VS Drain-Source voltage

Drain Current VS Gate-Source Voltage

 $R_{DS(on)}$ Resistance VS Gate-Source Voltage

Source Current VS Source to Drain Voltage

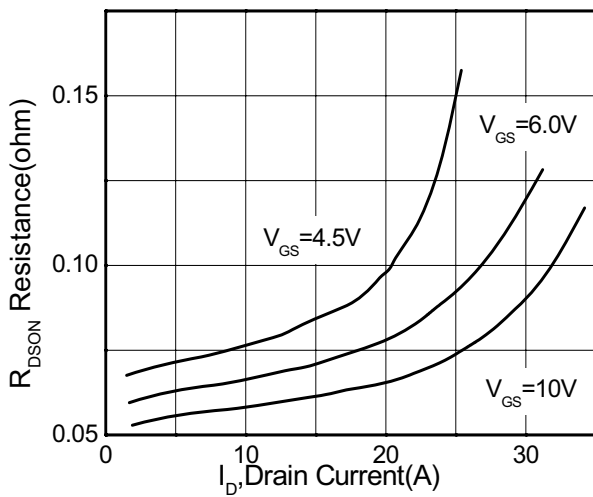
Typical Characteristics



Gate-source voltage vs Temperature

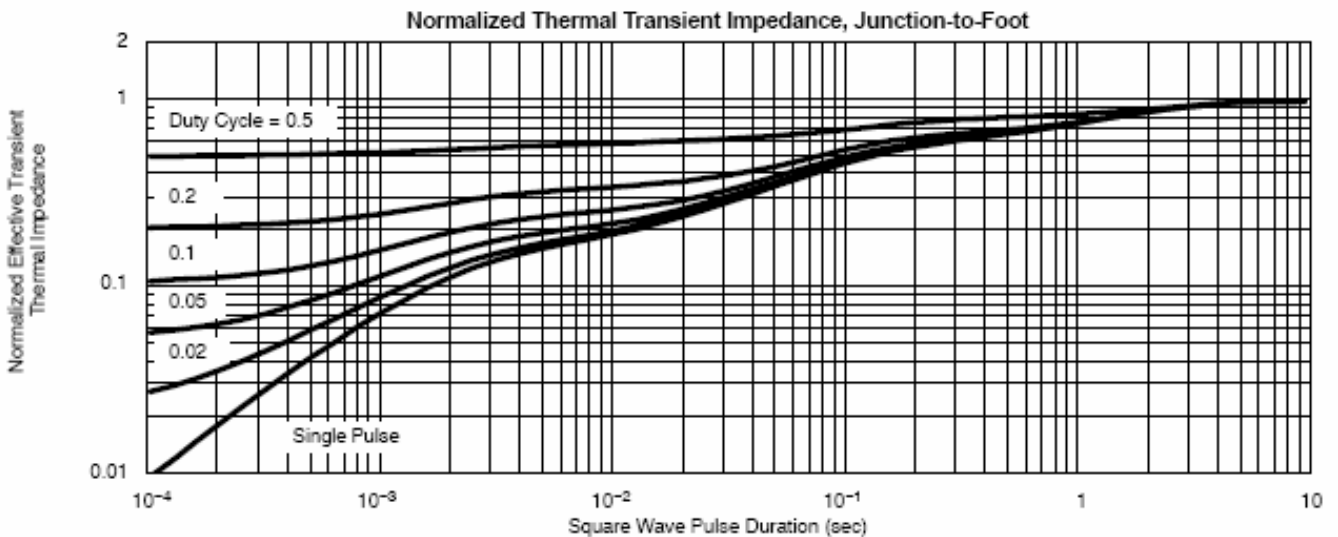
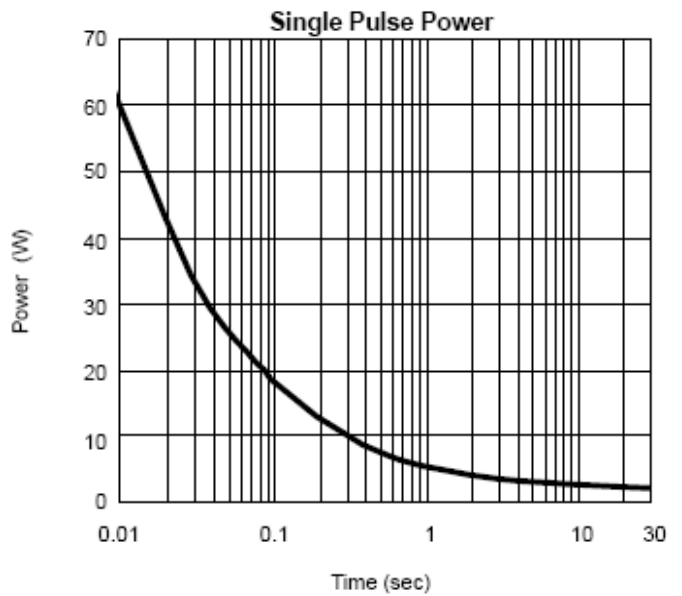
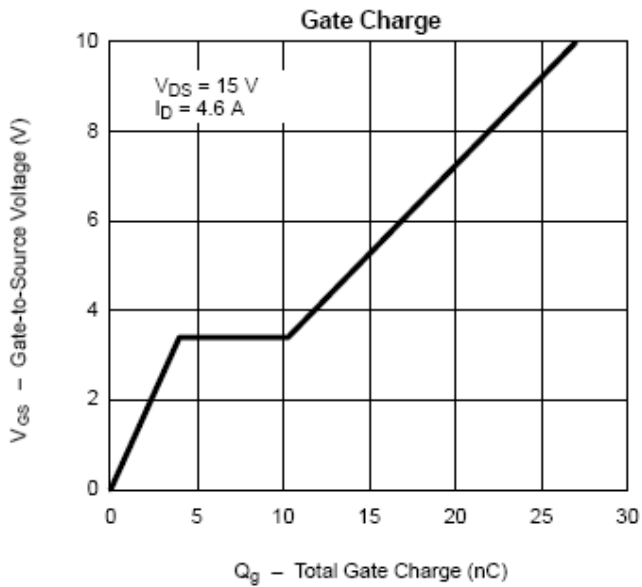


R_{DSON} Resistance VS T_J Temperature

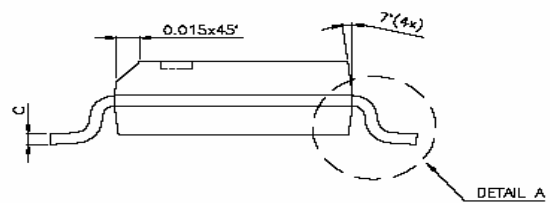
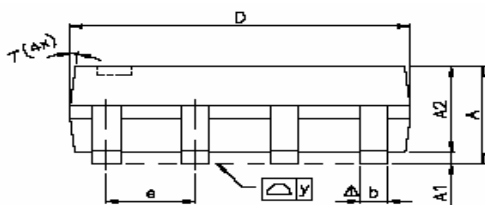
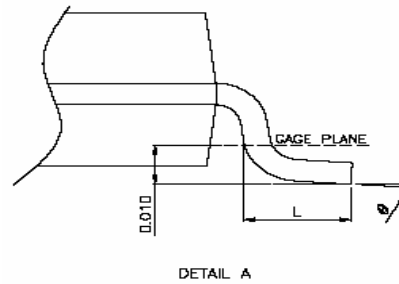
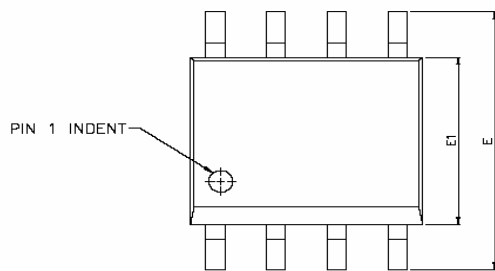


R_{DSON} Resistance VS I_D , Drain Current

Typical Characteristics



Packaging Information



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
Δ y	—	—	0.076	—	—	0.003
θ	0°	—	8°	0°	—	8°