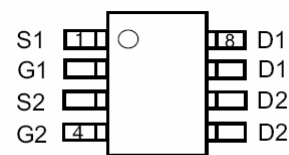


**WPMD3002**
**Dual P-Channel, -30V, -4.9A, Power MOSFET**
[Http://www.willsemi.com](http://www.willsemi.com)

$V_{DS}$ (V)	$R_{ds(on)}$ ( $\Omega$ )
-30	0.049@ $V_{GS}=-10V$
	0.070@ $V_{GS}=-4.5V$


**SOP-8L**


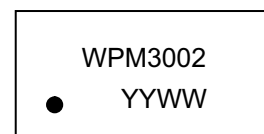
(Top View)

**Pin configuration (Top view)**
**Descriptions**

The WPMD3002 is the Dual P-Channel logic 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.

**Features**

- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP-8L package design



WPM3002 = Device Code  
 YY = Year  
 WW = Week

**Marking**
**Applications**

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

**Order information**

Device	Package	Shipping
WPMD3002-8/TR	SOP-8L	4000/Reel&Tape

**Absolute Maximum ratings**

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		$V_{DS}$	-30		V
Gate-Source Voltage		$V_{GS}$	$\pm 20$		
Continuous Drain Current <sup>a</sup>	$T_A=25^\circ\text{C}$	$I_D$	-4.9	-3.8	A
	$T_A=70^\circ\text{C}$		-3.9	-3.0	
Maximum Power Dissipation <sup>a</sup>	$T_A=25^\circ\text{C}$	$P_D$	1.9	1.1	W
	$T_A=70^\circ\text{C}$		1.2	0.7	
Continuous Drain Current <sup>b</sup>	$T_A=25^\circ\text{C}$	$I_D$	-4.5	-3.6	A
	$T_A=70^\circ\text{C}$		-3.6	-2.9	
Maximum Power Dissipation <sup>b</sup>	$T_A=25^\circ\text{C}$	$P_D$	1.6	1.0	W
	$T_A=70^\circ\text{C}$		1.0	0.6	
Pulsed Drain Current <sup>c</sup>		$I_{DM}$	-30		A
Operating Junction Temperature		$T_J$	150		$^\circ\text{C}$
Lead Temperature		$T_L$	260		$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	-55 to 150		$^\circ\text{C}$

**Thermal resistance ratings**

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	56	65	$^\circ\text{C/W}$
	Steady State		87	105	
Junction-to-Ambient Thermal Resistance <sup>b</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	64	76	
	Steady State		96	115	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	32	40	
Dual Operation					
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	61	70	
	Steady State		92	112	
Junction-to-Ambient Thermal Resistance <sup>b</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	69	82	
	Steady State		102	120	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	36	45	

a Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

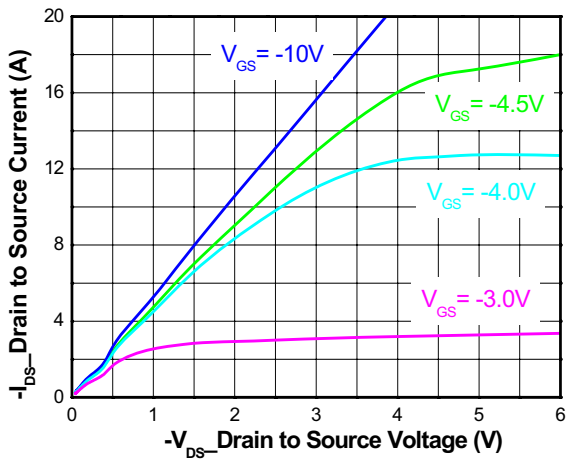
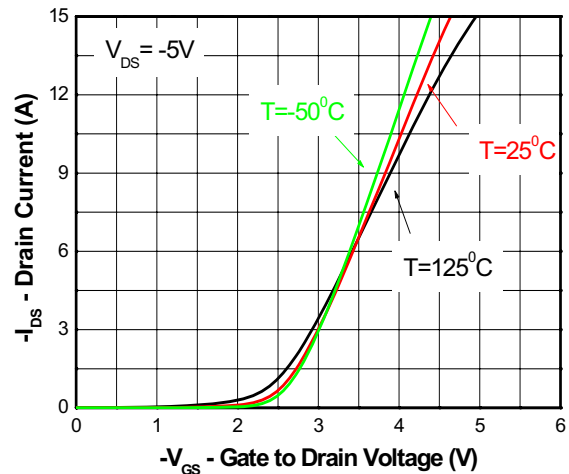
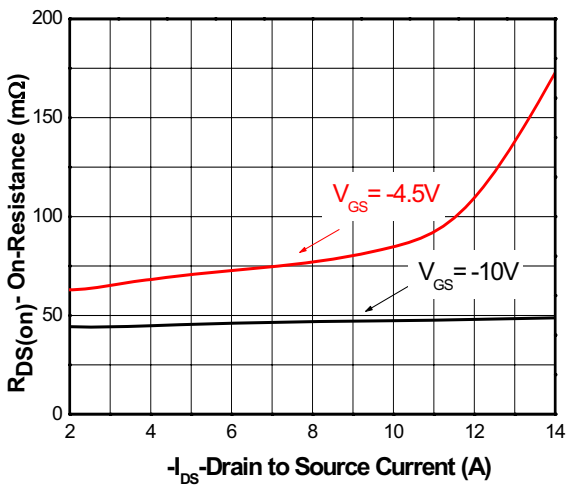
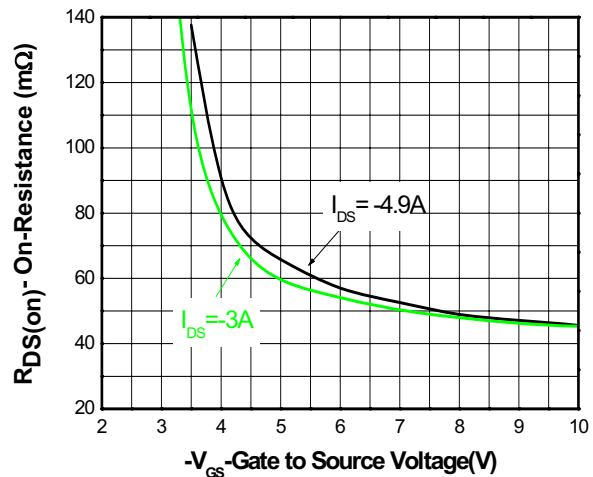
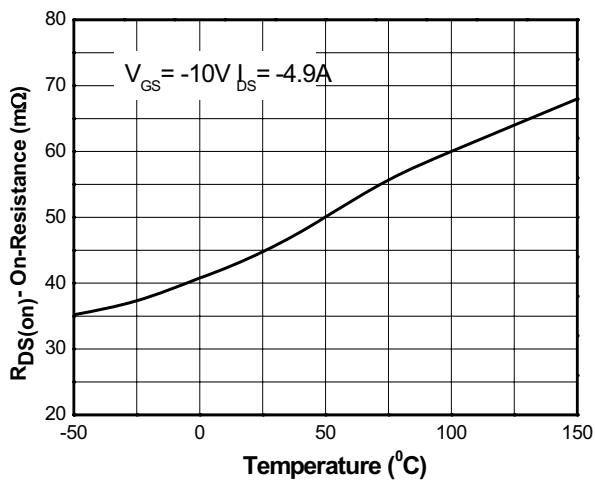
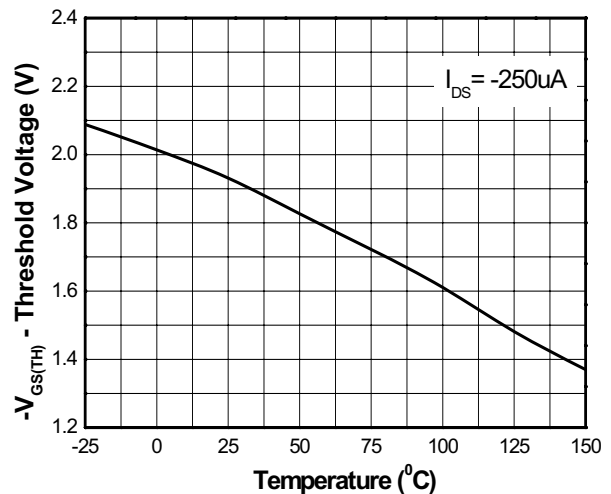
b Surface mounted on FR4 board using minimum pad size, 1oz copper

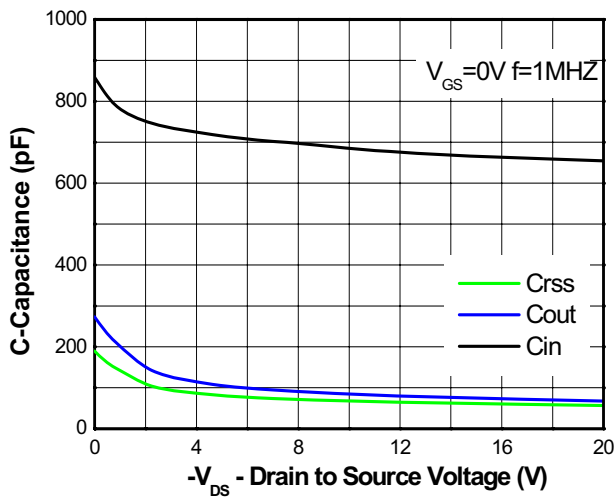
c Repetitive rating, pulse width limited by junction temperature,  $t_p=10\mu\text{s}$ , Duty Cycle=1%

d Repetitive rating, pulse width limited by junction temperature  $T_J=150^\circ\text{C}$ .

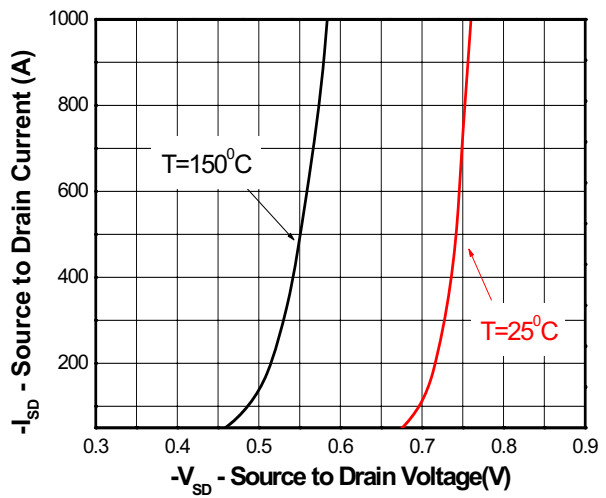
**Electronics Characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\mu\text{A}$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\mu\text{A}$	-1.5	-1.9	-2.5	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -4.9\text{ A}$		49	60	m $\Omega$
		$V_{GS} = -10\text{ V}, I_D = -3.0\text{ A}$		49	60	
		$V_{GS} = -4.5\text{ V}, I_D = -4.0\text{ A}$		70	90	
		$V_{GS} = -4.5\text{ V}, I_D = -3.0\text{ A}$		70	90	
Forward Transconductance	$g_{FS}$	$V_{DS} = -15\text{ V}, I_D = -3.0\text{ A}$		5.0		S
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	$C_{ISS}$	$V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}, V_{DS} = -15\text{ V}$		670		pF
Output Capacitance	$C_{OSS}$			75		
Reverse Transfer Capacitance	$C_{RSS}$			62		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -10\text{ V}, V_{DS} = -15\text{ V}, I_D = -4.9\text{ A}$		14.0		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.31		
Gate-to-Source Charge	$Q_{GS}$			1.80		
Gate-to-Drain Charge	$Q_{GD}$			1.60		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS} = -10\text{ V}, V_{DS} = -15\text{ V}, R_L = 5.0\Omega, R_G = 15\Omega$		6.8		ns
Rise Time	$t_r$			3.2		
Turn-Off Delay Time	$t_{d(OFF)}$			25.2		
Fall Time	$t_f$			4.4		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS} = 0\text{ V}, I_S = -1.0\text{ A}$	-0.55	-0.78	-1.50	V

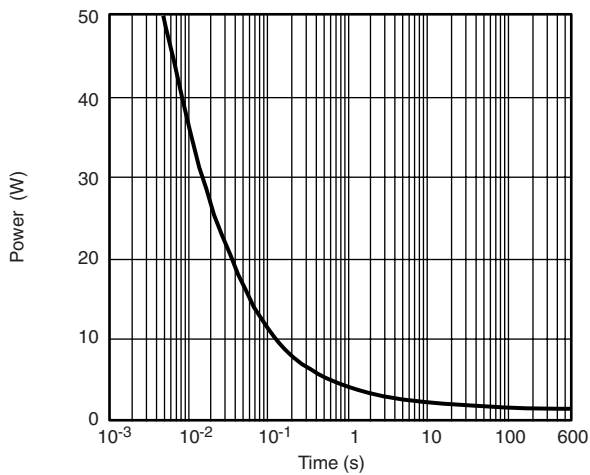
**Typical Characteristics (Ta=25°C, unless otherwise noted)**

**Output characteristics**

**Transfer characteristics**

**On-Resistance vs. Drain current**

**On-Resistance vs. Gate-to-Source voltage**

**On-Resistance vs. Junction temperature**

**Threshold voltage vs. Temperature**



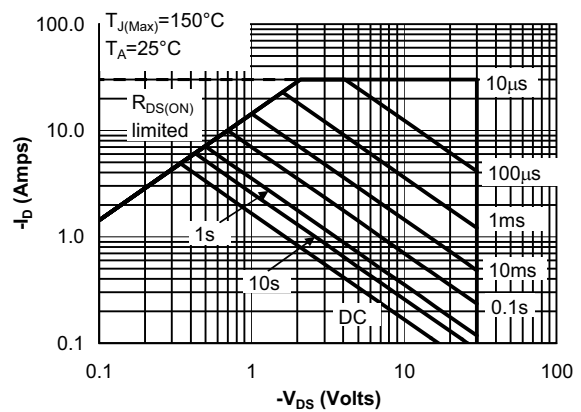
Capacitance



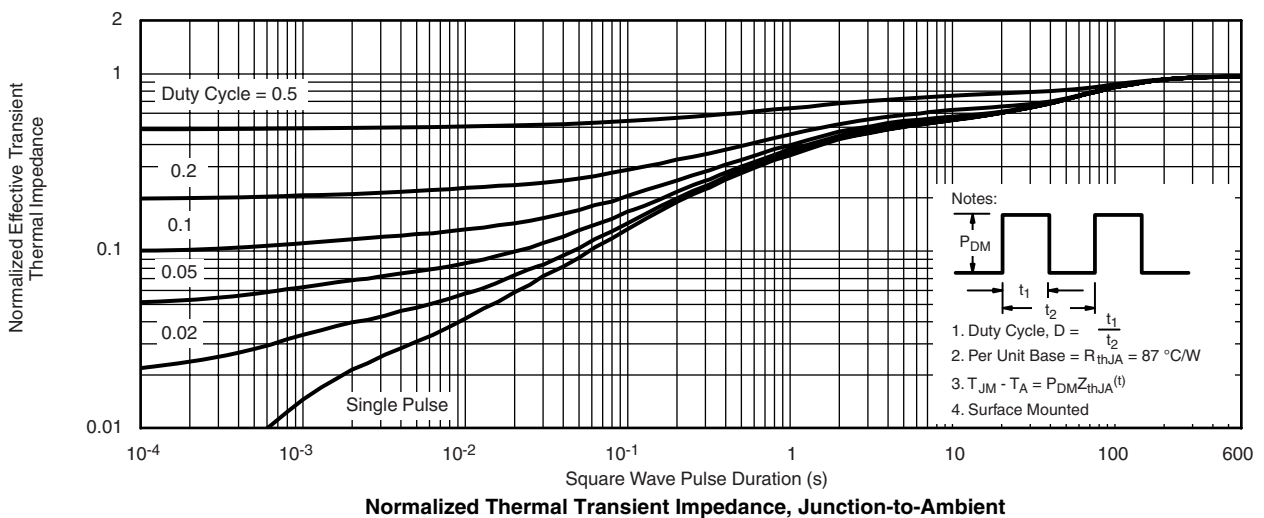
Body diode forward voltage

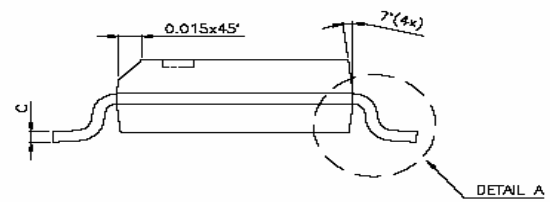
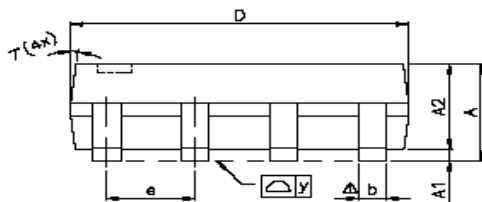
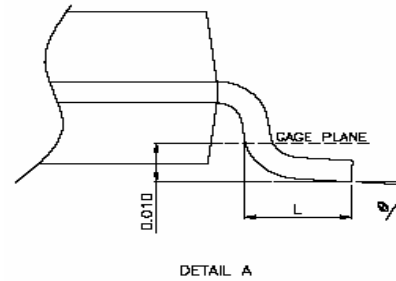
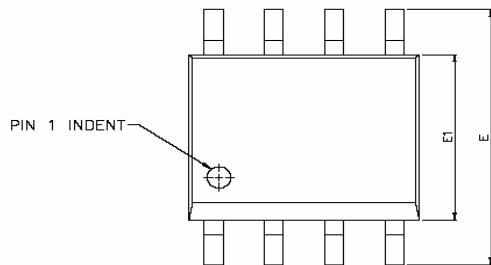


Single pulse power



Safe operating power



**Package outline dimensions**
**SOP-8L**


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	1.47	1.60	1.73
A1	0.10		0.25
A2		1.45	
b	0.33	0.41	0.51
C	0.19	0.20	0.25
D	4.80	4.85	4.95
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e		1.27	
L	0.38	0.71	1.27
y			0.076
$\theta$	0°		8°