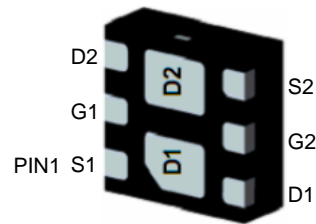
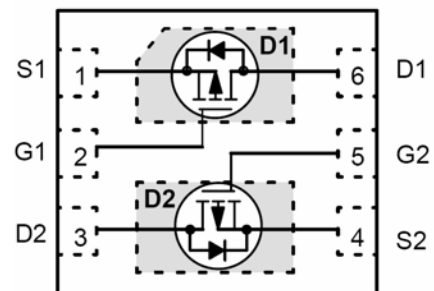


**WPMD2084**
**Dual P-Channel, -20V, -3.3A, Power MOSFET**
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

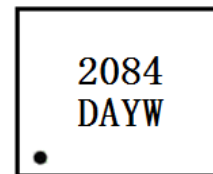
$V_{DS}$ (V)	Typical $R_{DS(on)}$ (m $\Omega$ )
-20	80 @ $V_{GS}=-4.5V$
	105 @ $V_{GS}=-2.5V$


**DFN2X2-6L**
**Descriptions**

The WPMD2084 is Dual P-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WPMD2084 is Pb-free.


**Pin configuration (Top view)**
**Features**

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Small package DFN2X2-6L



2084 = Device Code  
 DA = Special Code  
 Y = Year  
 W = Week(A~z)

**Marking**
**Applications**

- DC/DC converters
- Power supply converters circuit
- Load/Power Switching for portable device

**Order information**

Device	Package	Shipping
WPMD2084-6/TR	DFN2X2-6L	3000/Tape&Reel

**Absolute Maximum ratings**

Parameter	Symbol	10 s	Steady State	Unit	
Drain-Source Voltage	$V_{DS}$	-20		V	
Gate-Source Voltage	$V_{GS}$	±10			
Continuous Drain Current <sup>a d</sup>	$I_D$	$T_A=25^{\circ}C$	-3.3	-2.9	A
		$T_A=70^{\circ}C$	-2.6	-2.3	
Maximum Power Dissipation <sup>a d</sup>	$P_D$	$T_A=25^{\circ}C$	2.0	1.5	W
		$T_A=70^{\circ}C$	1.3	1.0	
Continuous Drain Current <sup>b d</sup>	$I_D$	$T_A=25^{\circ}C$	-2.2	-2.0	A
		$T_A=70^{\circ}C$	-1.7	-1.6	
Maximum Power Dissipation <sup>b d</sup>	$P_D$	$T_A=25^{\circ}C$	0.8	0.7	W
		$T_A=70^{\circ}C$	0.5	0.4	
Pulsed Drain Current <sup>c</sup>	$I_{DM}$	-18		A	
Operating Junction Temperature	$T_J$	-55 to 150		°C	
Lead Temperature	$T_L$	260		°C	
Storage Temperature Range	$T_{stg}$	-55 to 150		°C	

**Thermal resistance ratings**

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$t \leq 10$ s	$R_{\theta JA}$	50	62	°C/W
	Steady State		65	82	
Junction-to-Ambient Thermal Resistance <sup>b</sup>	$t \leq 10$ s	$R_{\theta JA}$	125	150	
	Steady State		145	175	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	30	38	

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

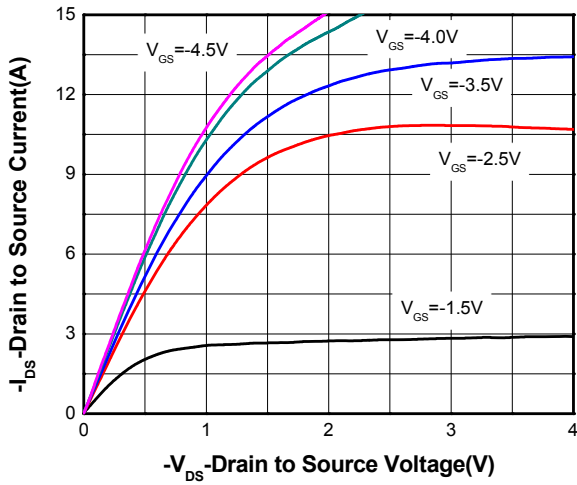
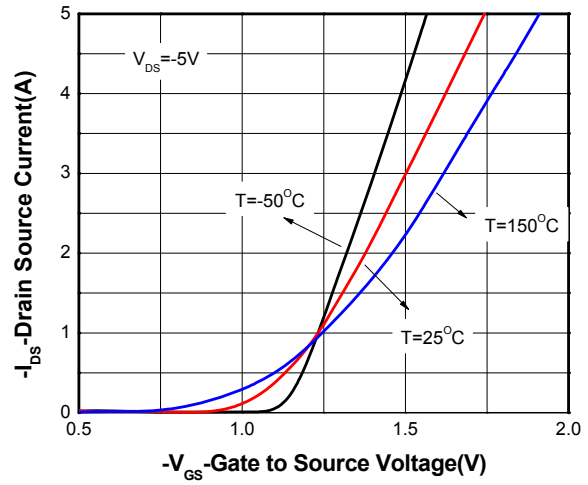
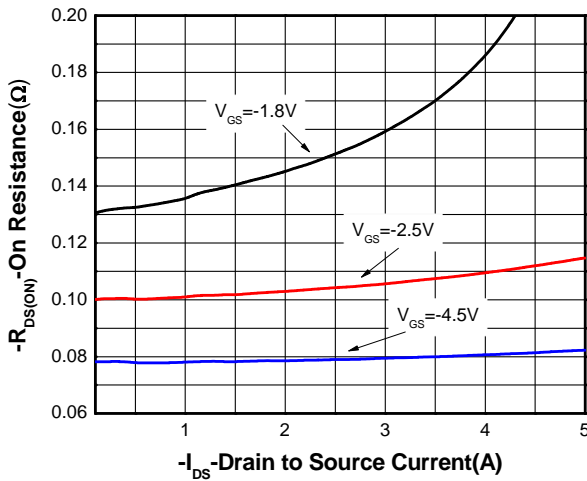
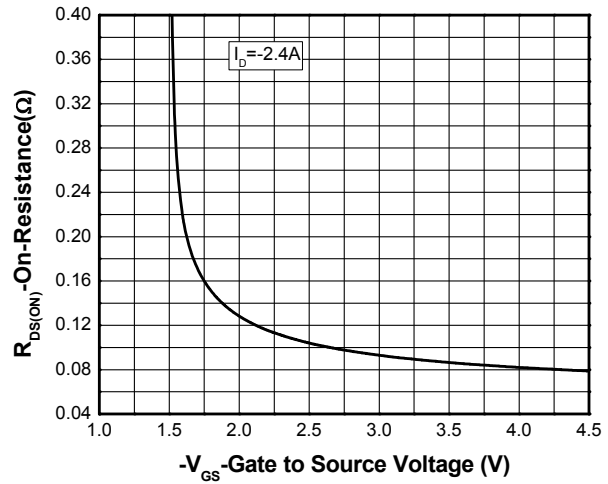
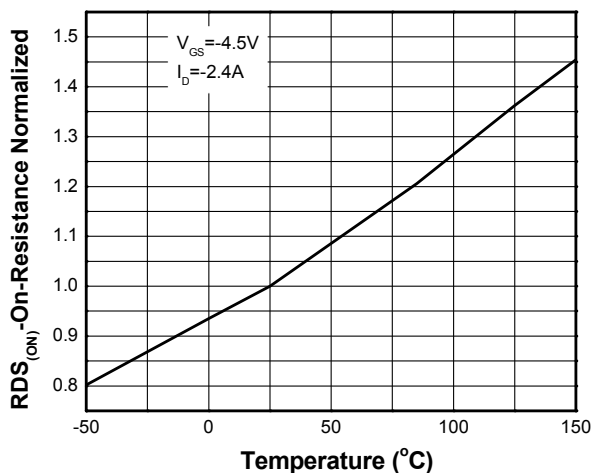
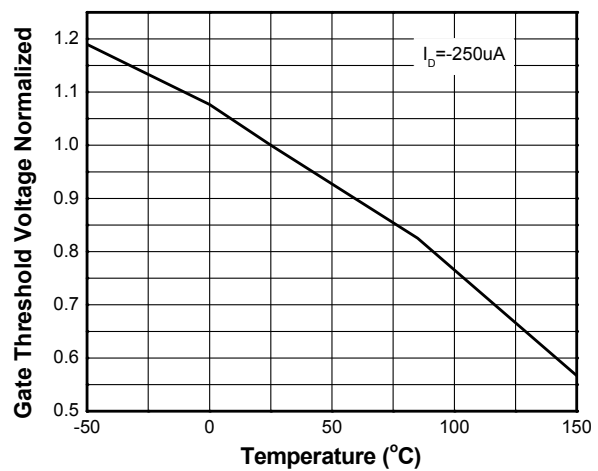
b Surface mounted on FR4 board using minimum pad size, 1oz copper

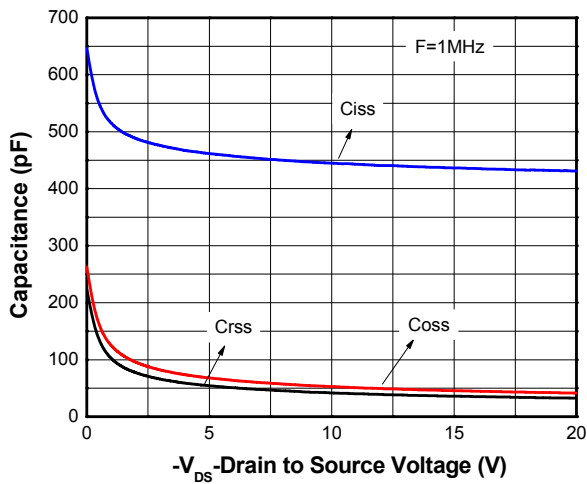
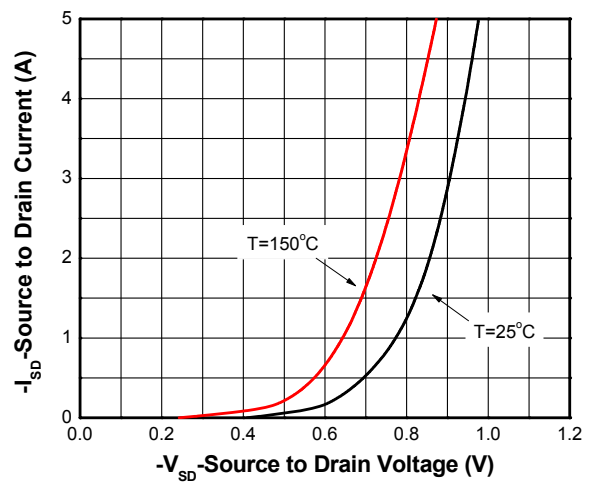
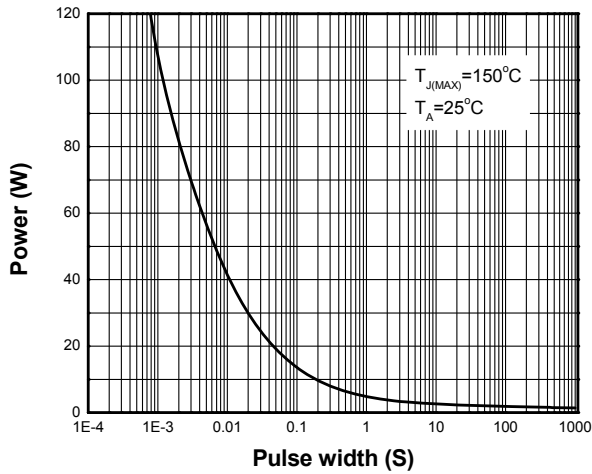
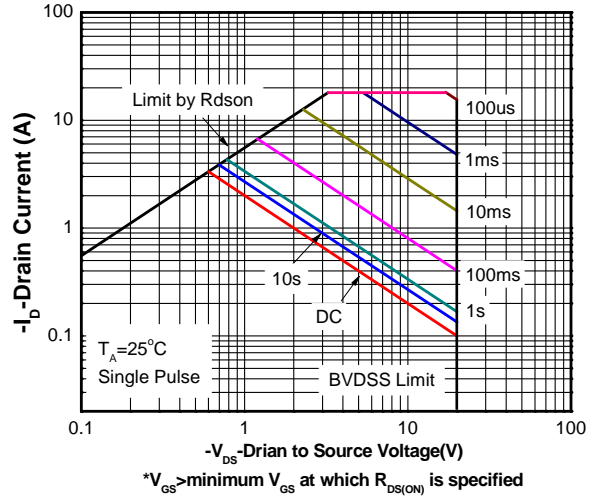
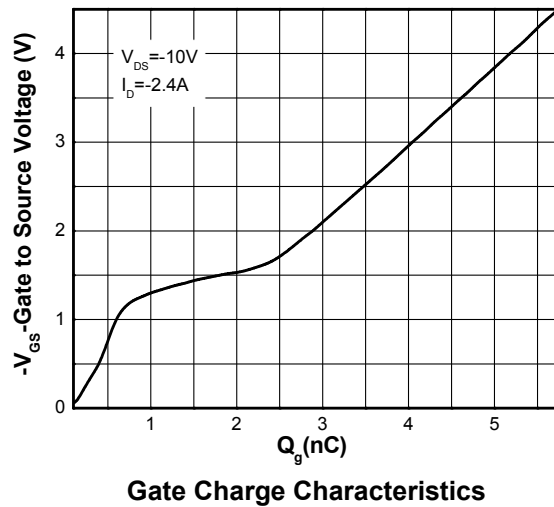
c Repetitive rating, pulse width limited by junction temperature,  $t_p=10\mu s$ , Duty Cycle=1%

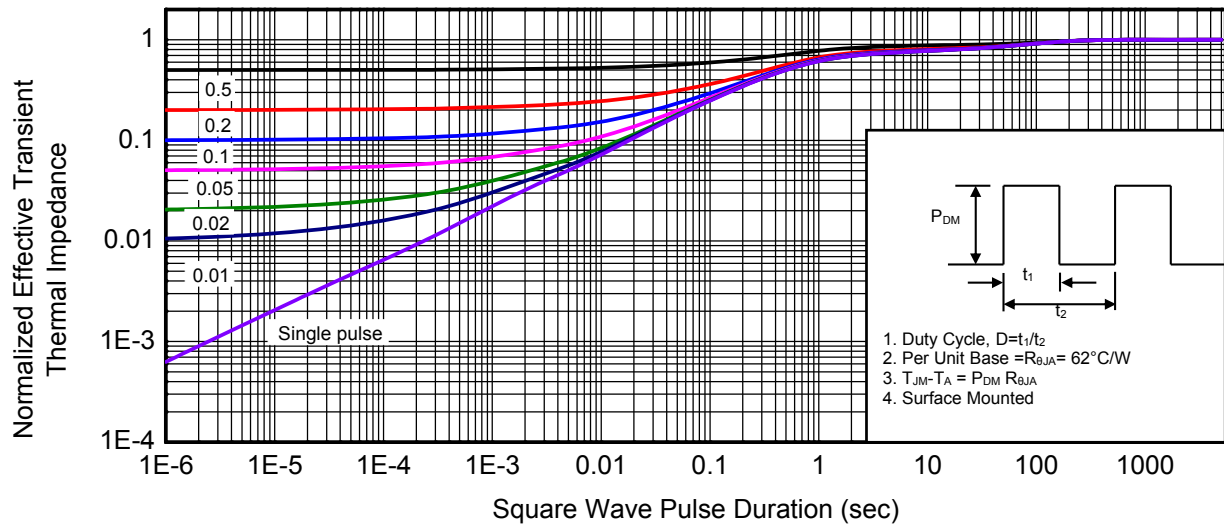
d Repetitive rating, pulse width limited by junction temperature  $T_J=150^{\circ}C$ .

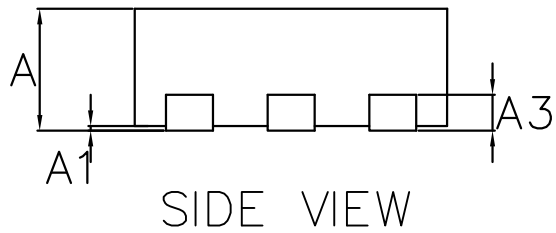
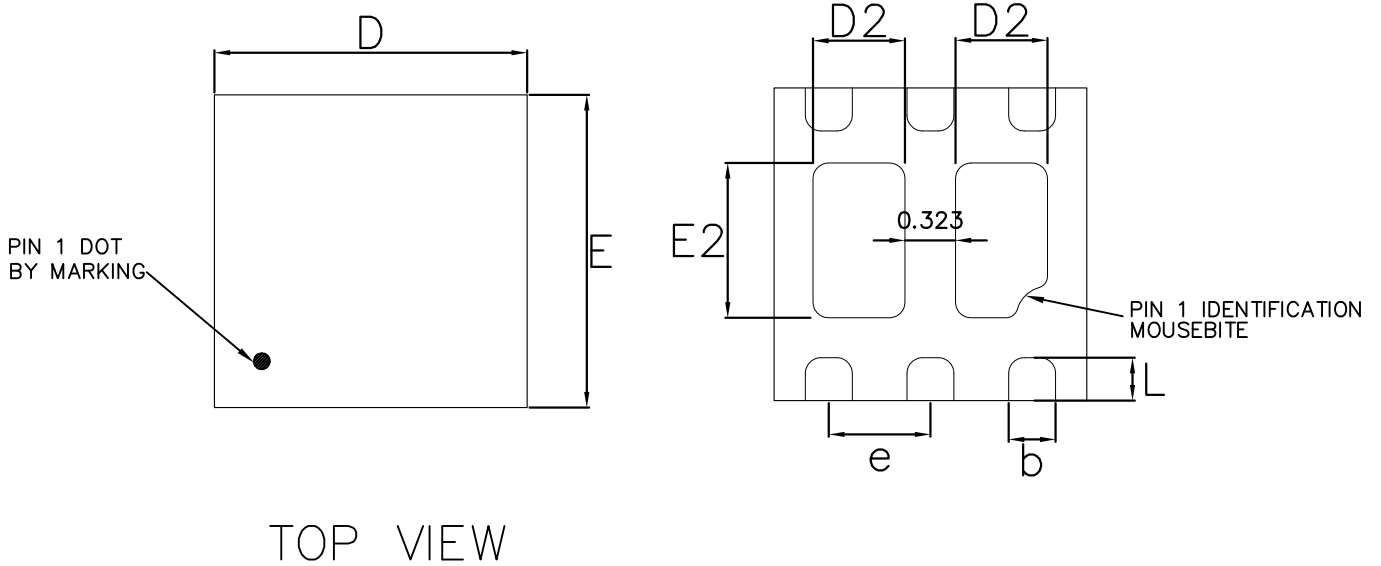
**Electronics Characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_D = -250\mu\text{A}$	-20			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -16\text{ V}, V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 10\text{ V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\mu\text{A}$	-0.4	-0.65	-1	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -2.4\text{ A}$		80	120	m $\Omega$
		$V_{GS} = -2.5\text{ V}, I_D = -2.0\text{ A}$		100	150	
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	$C_{ISS}$	$V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}, V_{DS} = -10\text{ V}$		444		pF
Output Capacitance	$C_{OSS}$			52		
Reverse Transfer Capacitance	$C_{RSS}$			41		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -4.5\text{ V}, V_{DS} = -10\text{ V}, I_D = -2.4\text{ A}$		5.8		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.5		
Gate-to-Source Charge	$Q_{GS}$			0.7		
Gate-to-Drain Charge	$Q_{GD}$			1.6		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = -4.5\text{ V}, V_{DS} = -6\text{ V}, I_D = -1\text{ A}, R_G = 6\Omega$		9.8		ns
Rise Time	$t_r$			4.4		
Turn-Off Delay Time	$t_d(OFF)$			35		
Fall Time	$t_f$			7.4		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS} = 0\text{ V}, I_S = -2.4\text{ A}$		-0.8	-1.5	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**

**Gate Charge Characteristics**

**Transient thermal response (Junction-to-Ambient)**


**Package outline dimensions**
**DFN2X2-6L**


COMMON DIMENSIONS(MM)			
PKG.	W: VERY VERY THIN		
REF.	MIN.	NOM.	MAX
A	0.70	0.75	0.80
A1	0.00	—	0.05
A3	0.20 REF.		
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	0.44	0.59	0.69
E2	0.84	0.99	1.09
b	0.25	0.30	0.35
L	0.175	0.275	0.375
e	0.65 BSC		