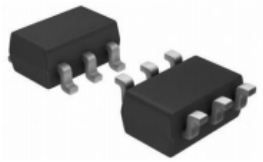
WPMD2075

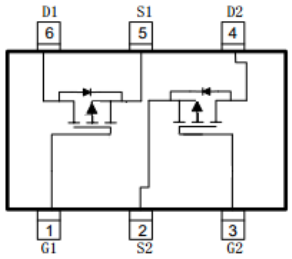
Dual P-Channel, -20V, -3.6A, Power MOSFET

Http://www.sh-willsemi.com

V_{DS} (V)	Typical Rds(on) (mΩ)
-20	60@ V_{GS}=-10V
	70@ V_{GS}=-4.5V
	100@ V_{GS}=-2.5V



SOT-23-6L



Pin configuration (Top view)

2075 = Device Code
PD = Special Code
Y =Year
W =Week

Marking

Descriptions

The WPMD2075 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.

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Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- SOT-23-6L package design

Applications

- Power Management
- DC-DC converter circuit
- Simple drive requirement
- Load Switch
- Charging

Order information

Device	Package	Shipping
WPMD2075-6/TR	SOT-23-6L	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	-20		V
Gate-Source Voltage		V_{GS}	±12		
Continuous Drain Current [a d]	T_A=25°C	I_D	-3.6	-3.3	A
	T_A=70°C		-2.9	-2.6	
Maximum Power Dissipation [a d]	T_A=25°C	P_D	1.2	1.0	W
	T_A=70°C		0.7	0.6	
Continuous Drain Current [b d]	T_A=25°C	I_D	-3.3	-3.0	A
	T_A=70°C		-2.6	-2.4	
Maximum Power Dissipation [b d]	T_A=25°C	P_D	1.0	0.8	W
	T_A=70°C		0.6	0.5	
Pulsed Drain Current [c]		I_{DM}	-20		A
Operating Junction Temperature		T_J	150		°C
Storage Temperature Range		T_{stg}	-55 to 150		°C

Thermal resistance ratings

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	90	108	°C/W
	Steady State		110	130	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	105	128	
	Steady State		133	158	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	60	75	

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

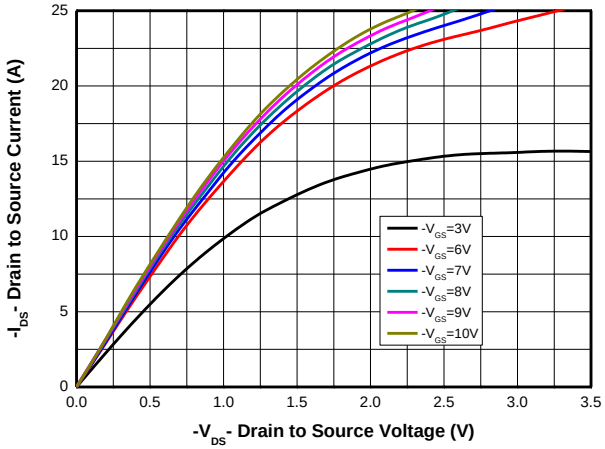
c Maximum junction temperature T_J=150° C.

d Repetitive rating, pulse width limited by junction temperature, tp=10μs, Duty Cycle=1%.

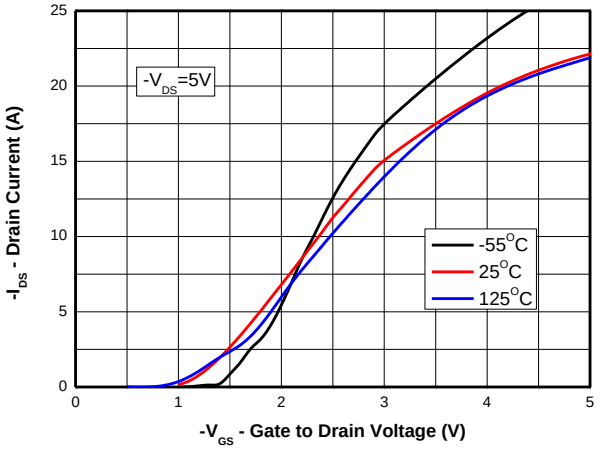
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = -250uA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-20 V, V_{GS} = 0V			-1	uA
Gate-to-source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} =±12V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = -250uA	-0.3	-0.7	-1.5	V
Drain-to-source On-resistance [e]	$R_{DS(on)}$	VGS = -10V, ID = -5A		60	75	mΩ
		VGS = -4.5V, ID = -4A		70	95	
		VGS = -2.5V, ID = -2.5A		100	150	
Forward Transconductance	g_{FS}	VDS = -5 V, ID = -0.45A		5		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f =1.0MHz, V_{DS} = -15 V		471		pF
Output Capacitance	C_{OSS}			51		
Reverse Transfer Capacitance	C_{RSS}			46		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = -10 V, V_{DS} = -10 V, I_D = -5A		7		nC
Gate-to-Source Charge	Q_{GS}			0.6		
Gate-to-Drain Charge	Q_{GD}			1.5		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = -4.5V, V_{DS} = -15V, ID=-4A, R_G=5 Ω		12.8		ns
Rise Time	tr			12		
Turn-Off Delay Time	td(OFF)			50.4		
Fall Time	tf			44.4		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = -0.9A		-0.84	-1.2	V

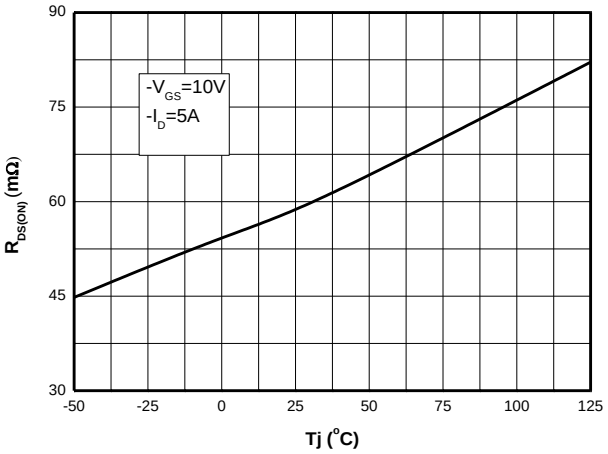
Typical Characteristics (Ta=25°C, unless otherwise noted)



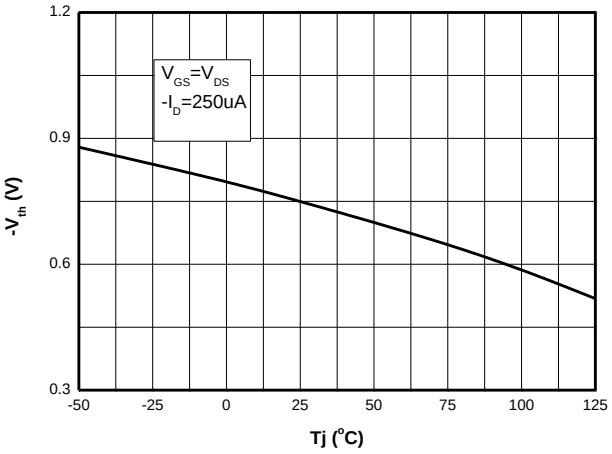
Output characteristics



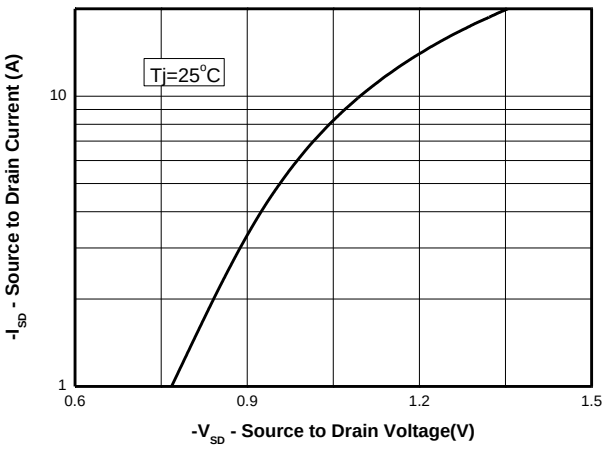
Transfer characteristics



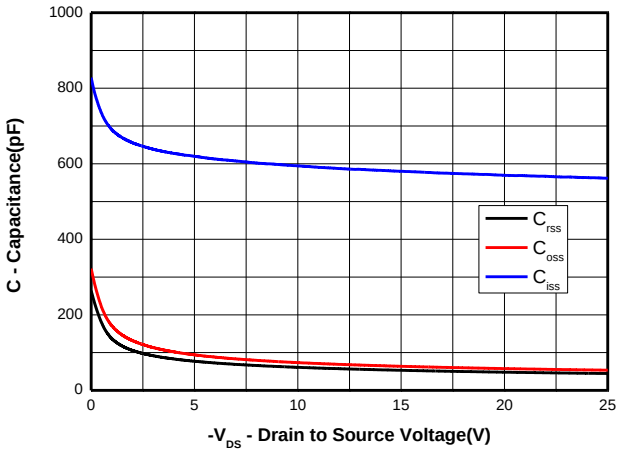
On-Resistance vs. Junction temperature



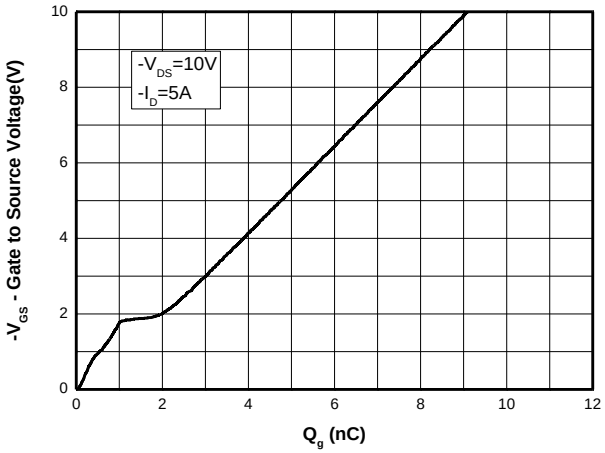
Threshold voltage vs. Temperature



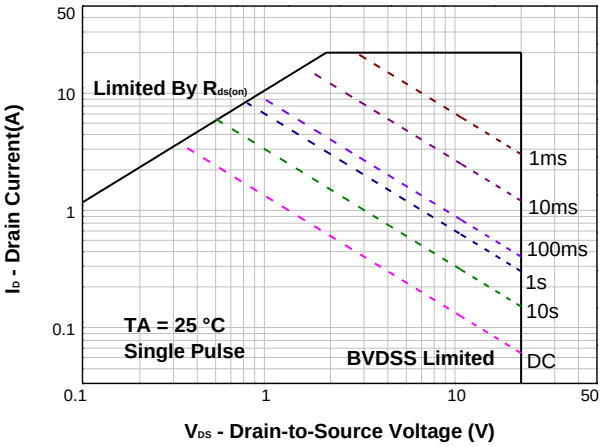
Body diode forward voltage



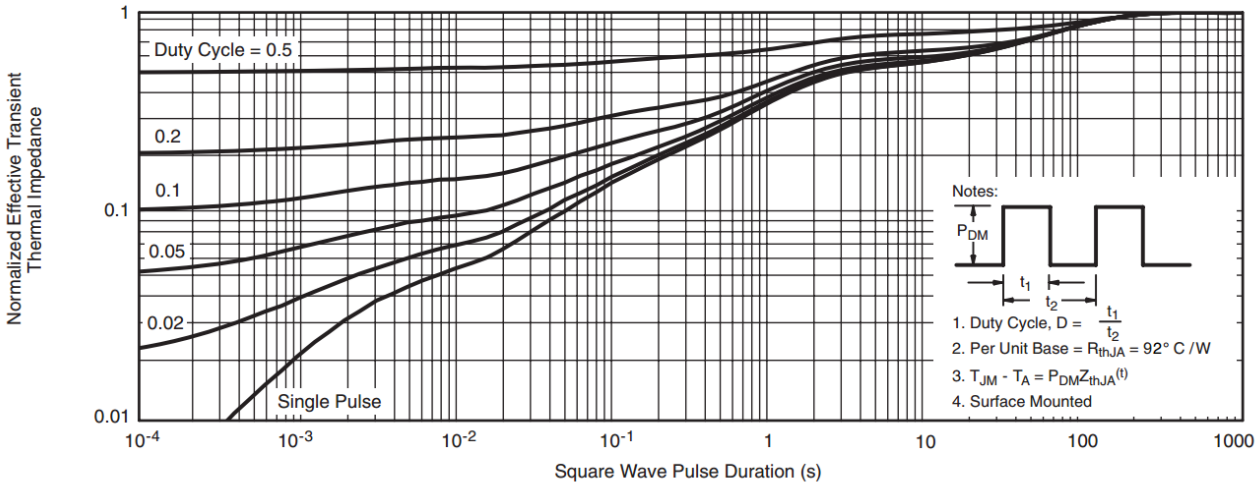
Capacitance



Total Gate Charge



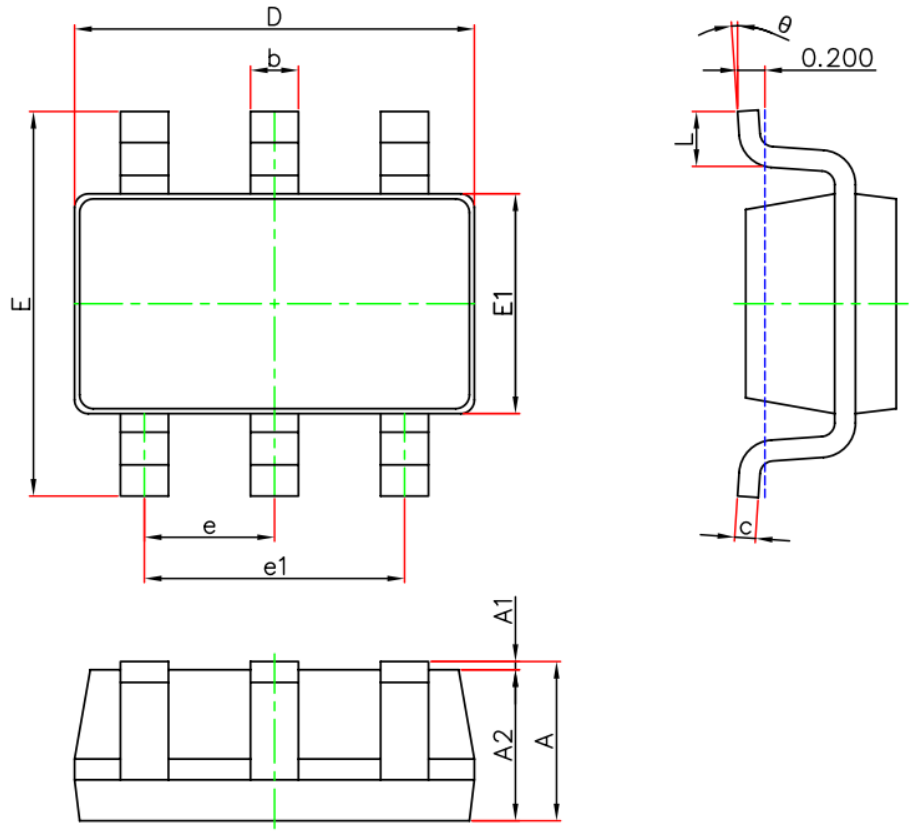
Safe operating power



Transient thermal response (Junction-to-Ambient)

Package outline dimensions

SOT-23-6L



Symbol	Dimensions In Millimeters	
	Min	Max
A	1.05	1.25
A1	0.00	0.10
A2	1.05	1.15
b	0.30	0.50
c	0.10	0.20
D	2.82	3.02
E	2.65	2.95
E1	1.50	1.70
e	0.95 (BSC)	
L	0.30	0.60
e1	1.80	2.00
θ	0 °	8 °