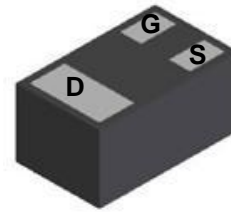


WPM3027

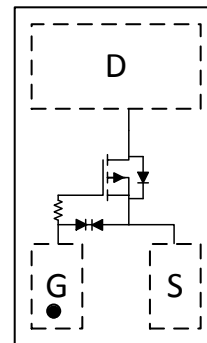
Single P-Channel, -30V, -0.57A, Power MOSFET

[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

V _{DS} (V)	Typical R _{DS(on)} (mΩ)
-30	415 @ V _{GS} =-4.5V
	500 @ V _{GS} =-2.5V
	600 @ V _{GS} =-1.8V
ESD Protected	


DFN1006-3L
Descriptions

The WPM3027 is 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 WPM3027 is Pb-free.


Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Small package DFN1006-3L

Pin configuration (Top view)


I = Device Code
* = Month(A~z)

Marking
Applications

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

Order information

Device	Package	Shipping
WPM3027-3/TR	DFN1006-3L	10K/Tape&Reel

Absolute Maximum ratings

Parameter	Symbol	10 s	Steady State	Unit	
Drain-Source Voltage	V_{DS}	-30		V	
Gate-Source Voltage	V_{GS}	± 10			
Continuous Drain Current ^{a d}	I_D	$T_A=25^\circ\text{C}$	-0.57	-0.53	A
		$T_A=70^\circ\text{C}$	-0.46	-0.42	
Maximum Power Dissipation ^{a d}	P_D	$T_A=25^\circ\text{C}$	0.32	0.27	W
		$T_A=70^\circ\text{C}$	0.2	0.18	
Continuous Drain Current ^{b d}	I_D	$T_A=25^\circ\text{C}$	-0.54	-0.5	A
		$T_A=70^\circ\text{C}$	-0.43	-0.4	
Maximum Power Dissipation ^{b d}	P_D	$T_A=25^\circ\text{C}$	0.28	0.25	W
		$T_A=70^\circ\text{C}$	0.18	0.16	
Pulsed Drain Current ^c	I_{DM}	-1.1		A	
Operating Junction Temperature	T_J	-55 to 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

Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient Thermal Resistance ^a	$R_{\theta JA}$	$t \leq 10 \text{ s}$	340	395	$^\circ\text{C/W}$
		Steady State	390	455	
Junction-to-Ambient Thermal Resistance ^b	$R_{\theta JA}$	$t \leq 10 \text{ s}$	387	441	
		Steady State	445	505	
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	240	285		

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

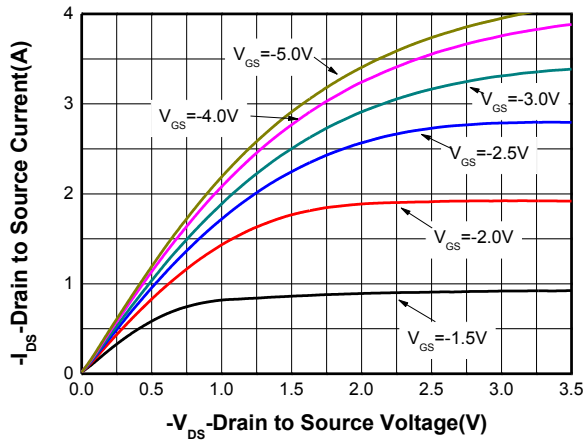
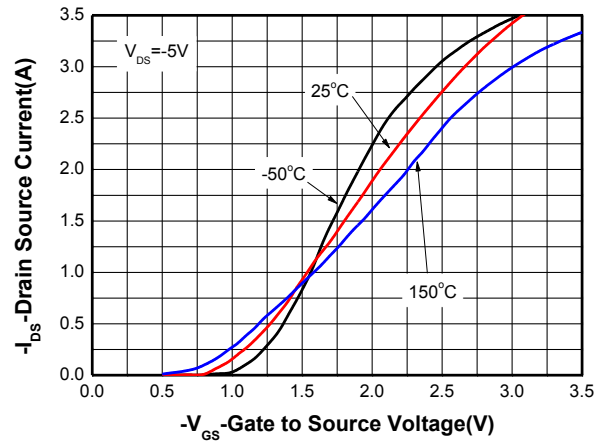
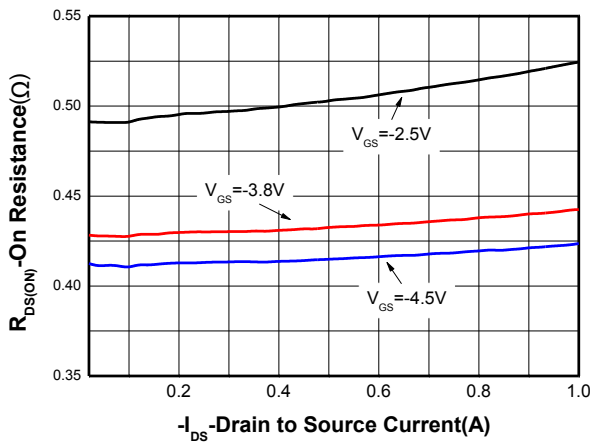
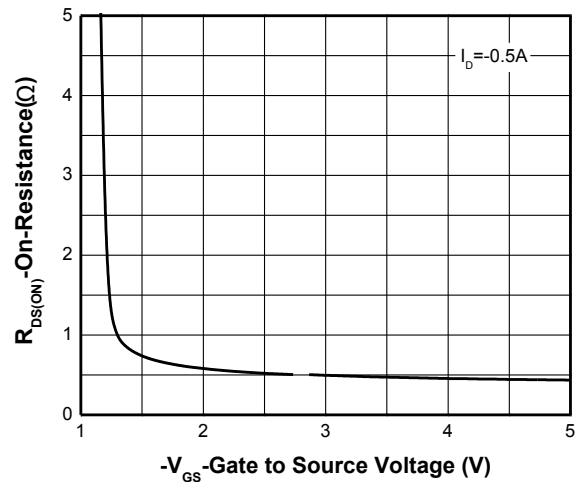
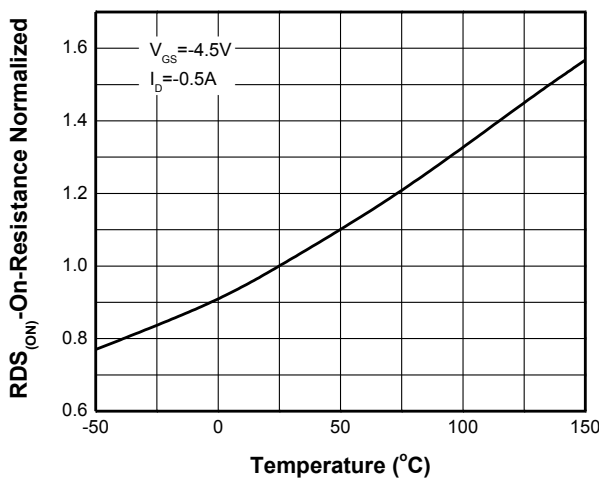
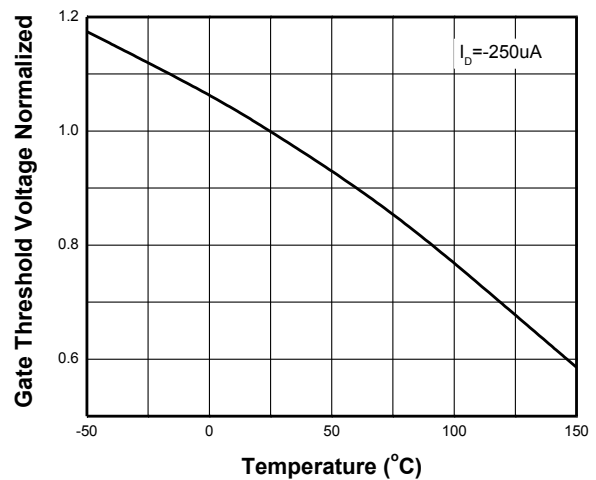
b Surface mounted on FR4 board using minimum pad size, 1oz copper

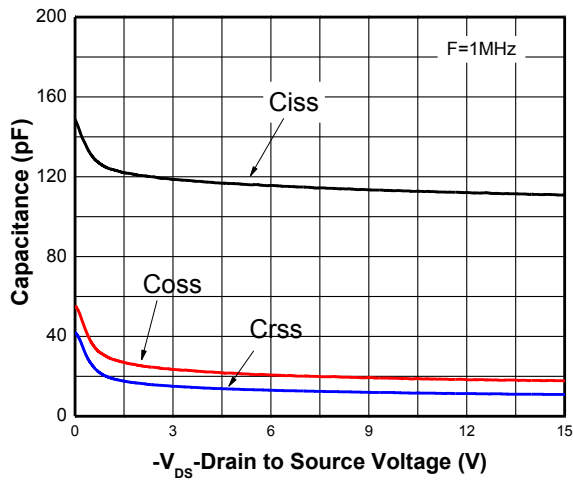
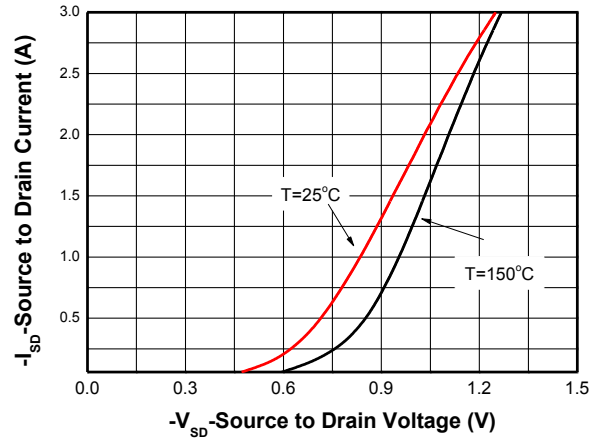
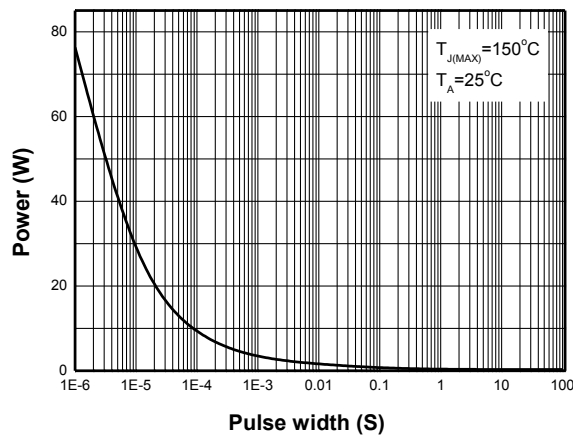
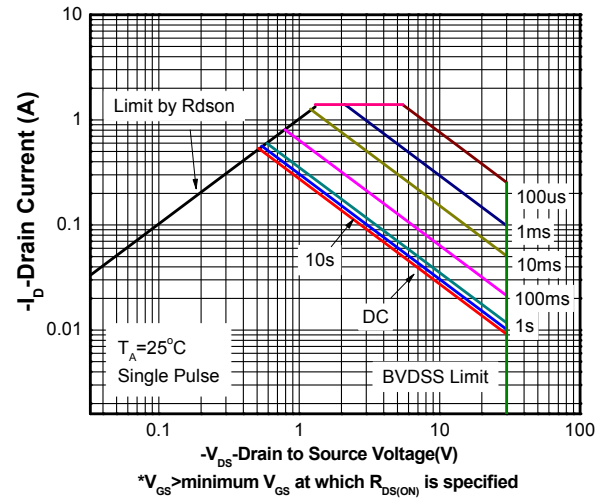
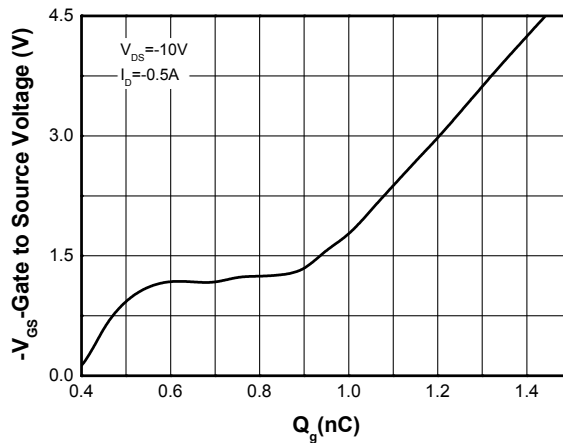
c Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu\text{s}$, Duty Cycle=1%

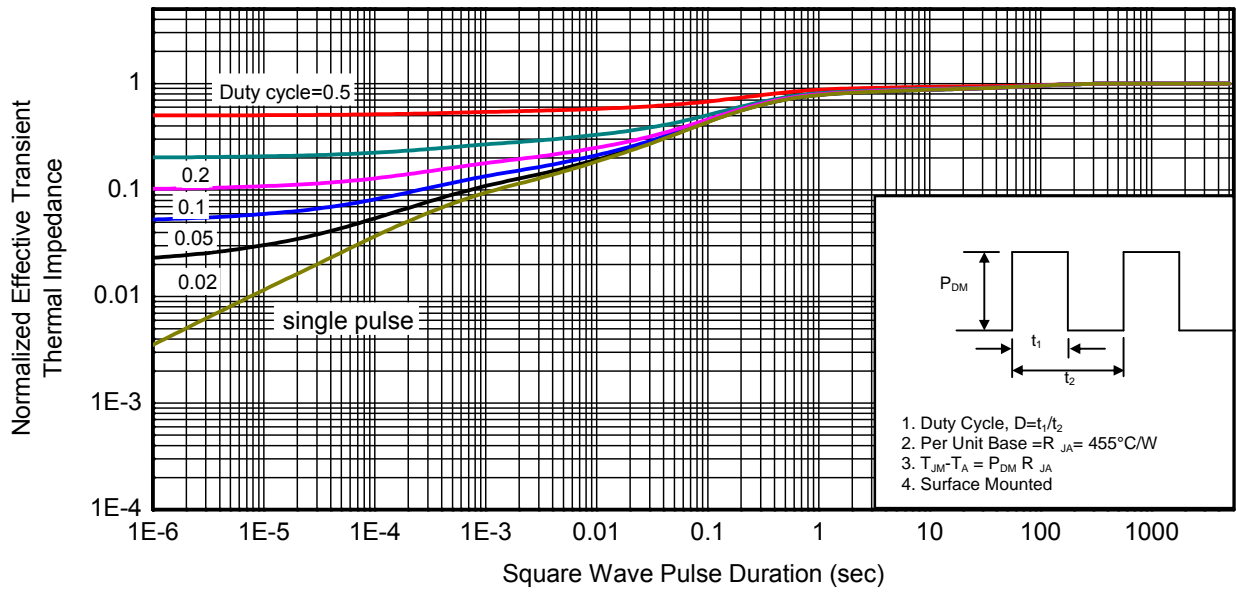
d Repetitive rating, pulse width limited by junction temperature $T_J=150^\circ\text{C}$.

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

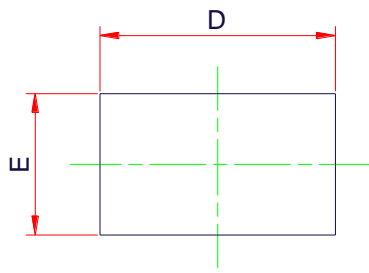
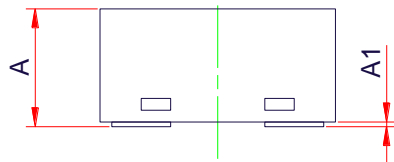
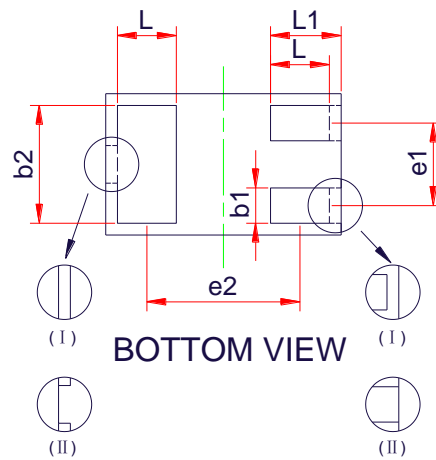
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24V, V_{GS} = 0V$			-1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 10V$			± 5	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\mu A$	-0.45	-0.65	-1.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -0.2A$		415	650	m Ω
		$V_{GS} = -2.5V, I_D = -0.1A$		500	800	
		$V_{GS} = -1.8V, I_D = -75mA$		600	950	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS} = 0V, f = 1.0MHz, V_{DS} = -15V$		110		pF
Output Capacitance	C_{OSS}			18		
Reverse Transfer Capacitance	C_{RSS}			11		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -4.5V, V_{DS} = -15V, I_D = -0.5A$		1.45		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.46		
Gate-to-Source Charge	Q_{GS}			0.6		
Gate-to-Drain Charge	Q_{GD}			0.44		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = -4.5V, V_{DS} = -15V, I_D = -0.5A, R_G = 1\Omega$		8		ns
Rise Time	t_r			6		
Turn-Off Delay Time	$t_d(OFF)$			26		
Fall Time	t_f			4		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = -0.3A$	-0.6	-0.75	-1.2	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

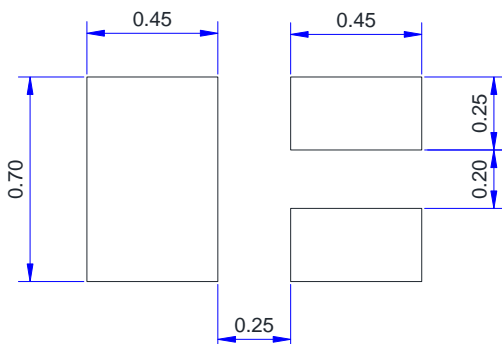

Capacitance

Body diode forward voltage

Single pulse power

Safe operating power

Gate Charge Characteristics



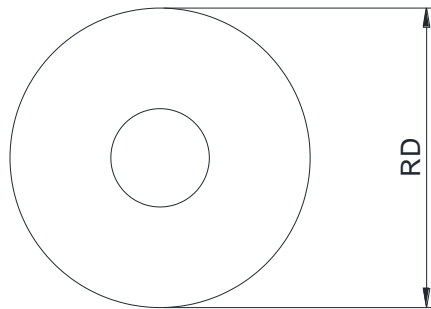
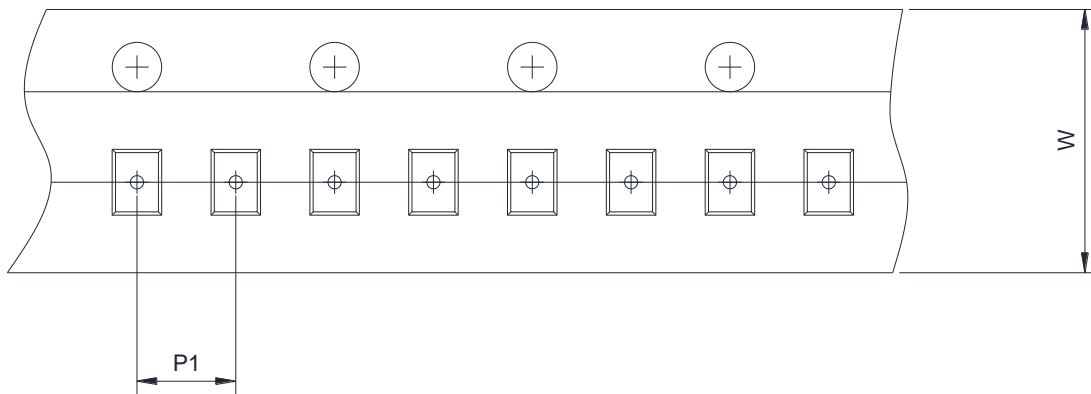
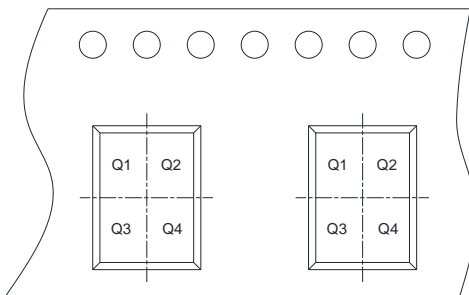
Transient thermal response (Junction-to-Ambient)

PACKAGE OUTLINE DIMENSIONS
DFN1006-3L

TOP VIEW

SIDE VIEW

BOTTOM VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.36	-	0.50
A1	0.00	-	0.05
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.10	0.15	0.20
b2	0.40	0.50	0.60
L	0.20	0.25	0.30
L1	0.20	0.30	0.40
e1	0.35Ref		
e2	0.65 Ref		

Recommend PCB Layout (Unit: mm)

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape



 User Direction of Feed

RD	Reel Dimension	<input checked="" type="checkbox"/> 7 inch	<input type="checkbox"/> 13 inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8 mm	<input type="checkbox"/> 12 mm <input type="checkbox"/> 16 mm
P1	Pitch between successive cavity centers	<input checked="" type="checkbox"/> 2 mm	<input type="checkbox"/> 4 mm <input type="checkbox"/> 8 mm
Pin1	Pin1 Quadrant	<input type="checkbox"/> Q1	<input checked="" type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4

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