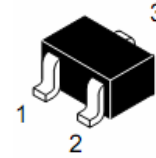
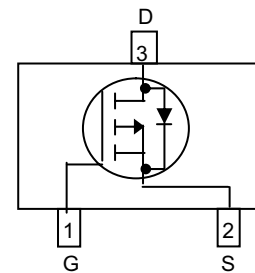


WPM3005
Single P-Channel, -30V, -4.1A, Power MOSFET
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

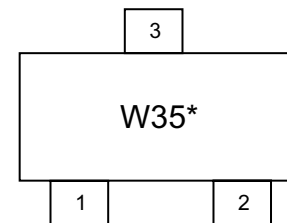
V_{DS} (V)	$R_{ds(on)}$ (Ω)
-30	0.057@ $V_{GS} = -10.0V$
	0.057@ $V_{GS} = -10.0V$
	0.083@ $V_{GS} = -4.5V$
	0.083@ $V_{GS} = -4.5V$


SOT-23-3L
Descriptions

The WPM3005 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 WPM3005 is Pb-free and Halogen-free.


Pin configuration (Top view)
Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOT-23-3L



W35= Device Code
 * = Month (A~Z)

Marking
Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Order information

Device	Package	Shipping
WPM3005-3/TR	SOT-23-3L	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	-30		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current ^a	$T_A=25^{\circ}\text{C}$	I_D	-4.1	-3.4	A
	$T_A=70^{\circ}\text{C}$		-3.3	-2.7	
Maximum Power Dissipation ^a	$T_A=25^{\circ}\text{C}$	P_D	1.4	1.0	W
	$T_A=70^{\circ}\text{C}$		0.9	0.6	
Continuous Drain Current ^b	$T_A=25^{\circ}\text{C}$	I_D	-3.8	-3.2	A
	$T_A=70^{\circ}\text{C}$		-3.0	-2.5	
Maximum Power Dissipation ^b	$T_A=25^{\circ}\text{C}$	P_D	1.2	0.8	W
	$T_A=70^{\circ}\text{C}$		0.8	0.5	
Pulsed Drain Current ^c		I_{DM}	-25		A
Operating Junction Temperature		T_J	150		°C
Lead Temperature		T_L	260		°C
Storage Temperature Range		T_{stg}	-55 to 150		°C

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$	65	85	°C/W
	Steady State		90	125	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	85	100	
	Steady State		115	140	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	40	60	

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

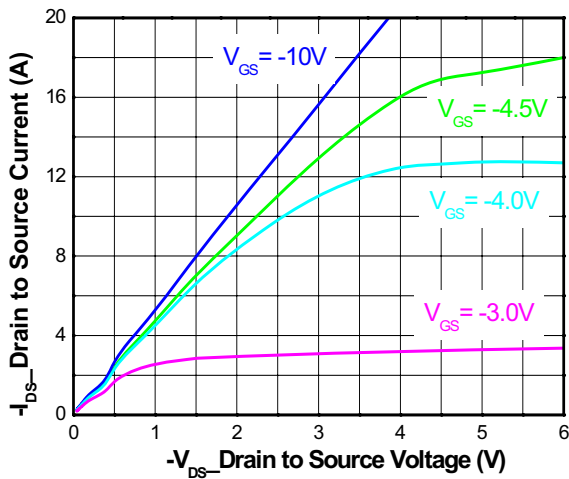
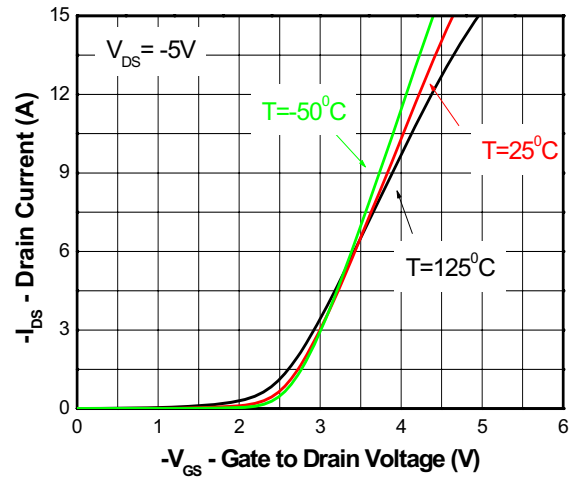
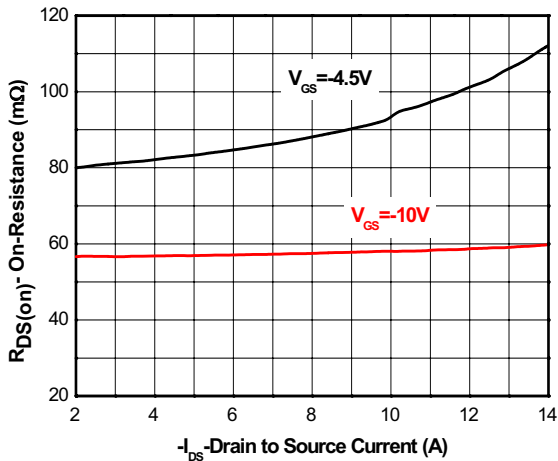
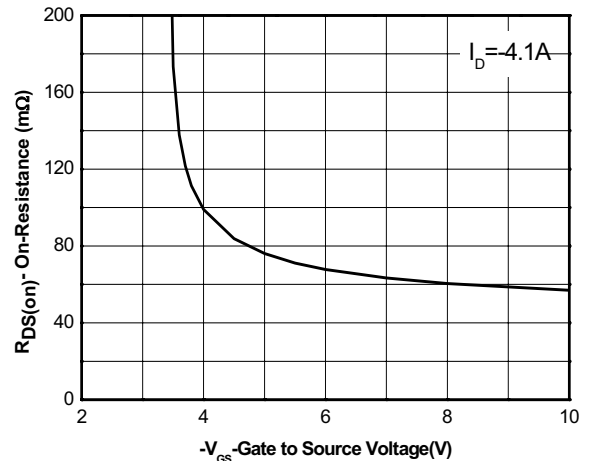
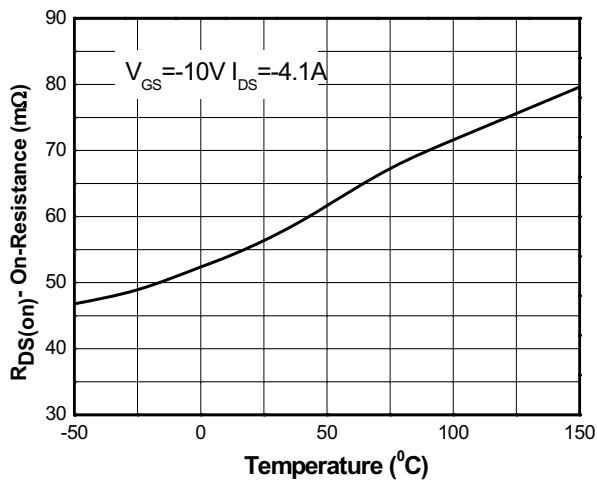
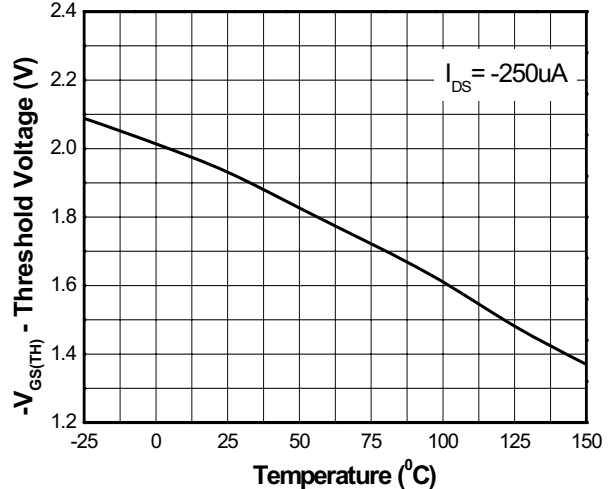
b Surface mounted on FR4 board using minimum pad size, 1oz copper

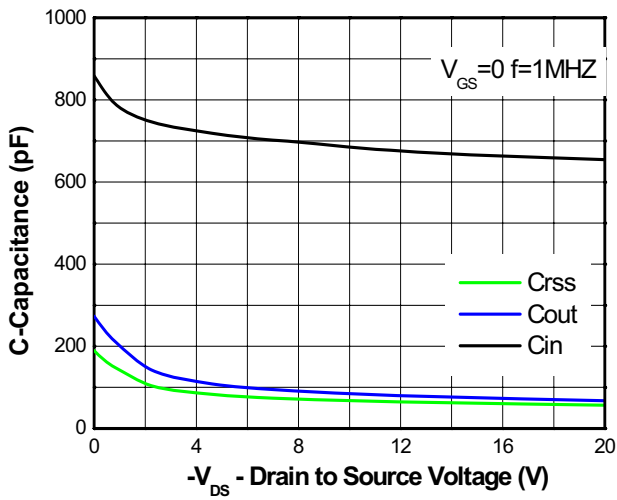
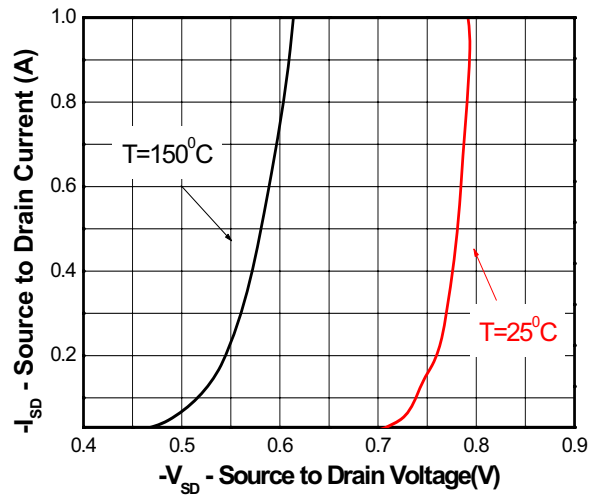
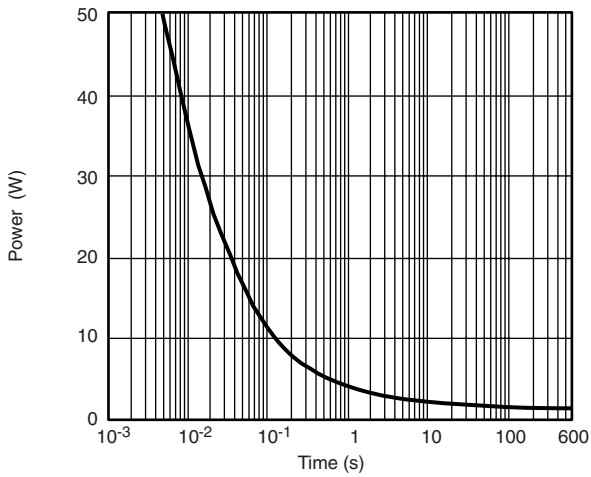
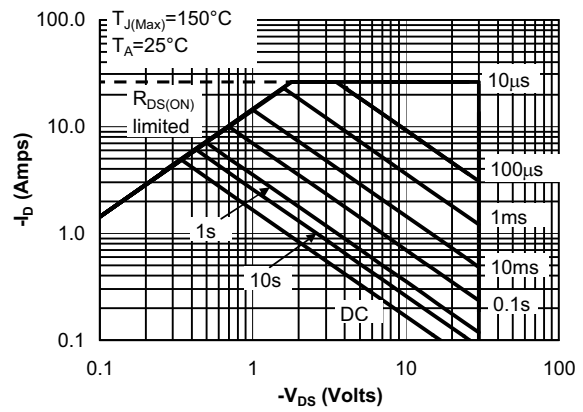
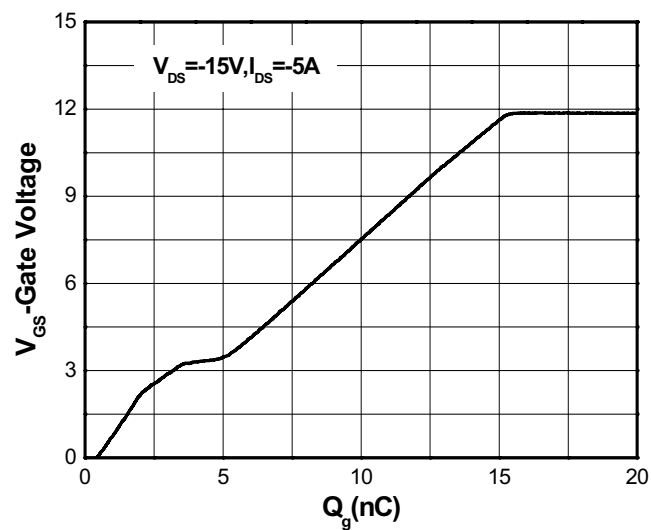
c Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu\text{s}$, Duty Cycle=1%

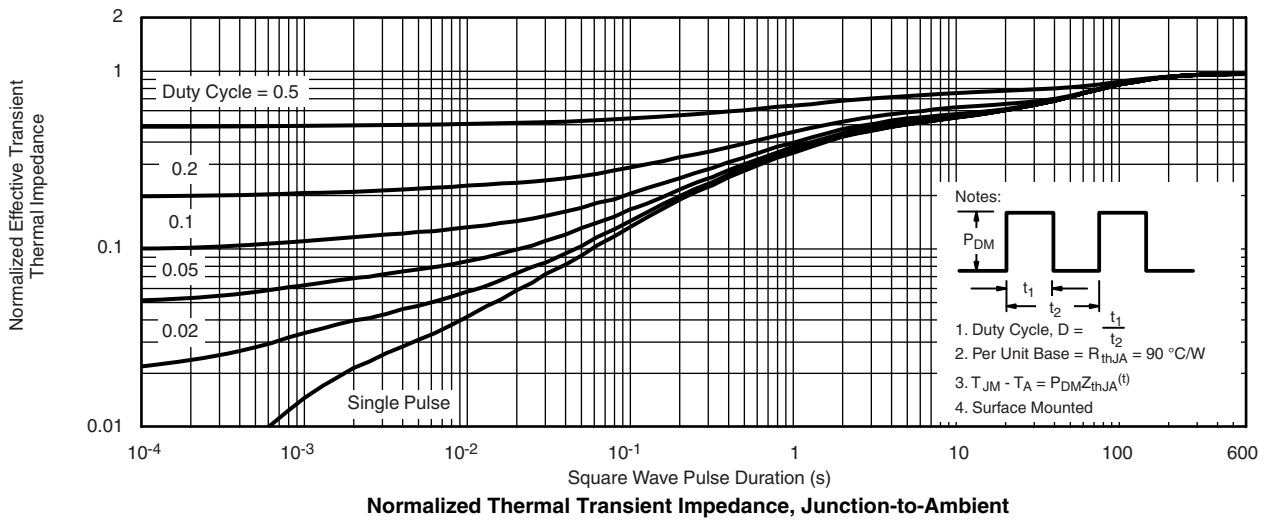
d Repetitive rating, pulse width limited by junction temperature $T_J=150^{\circ}\text{C}$.

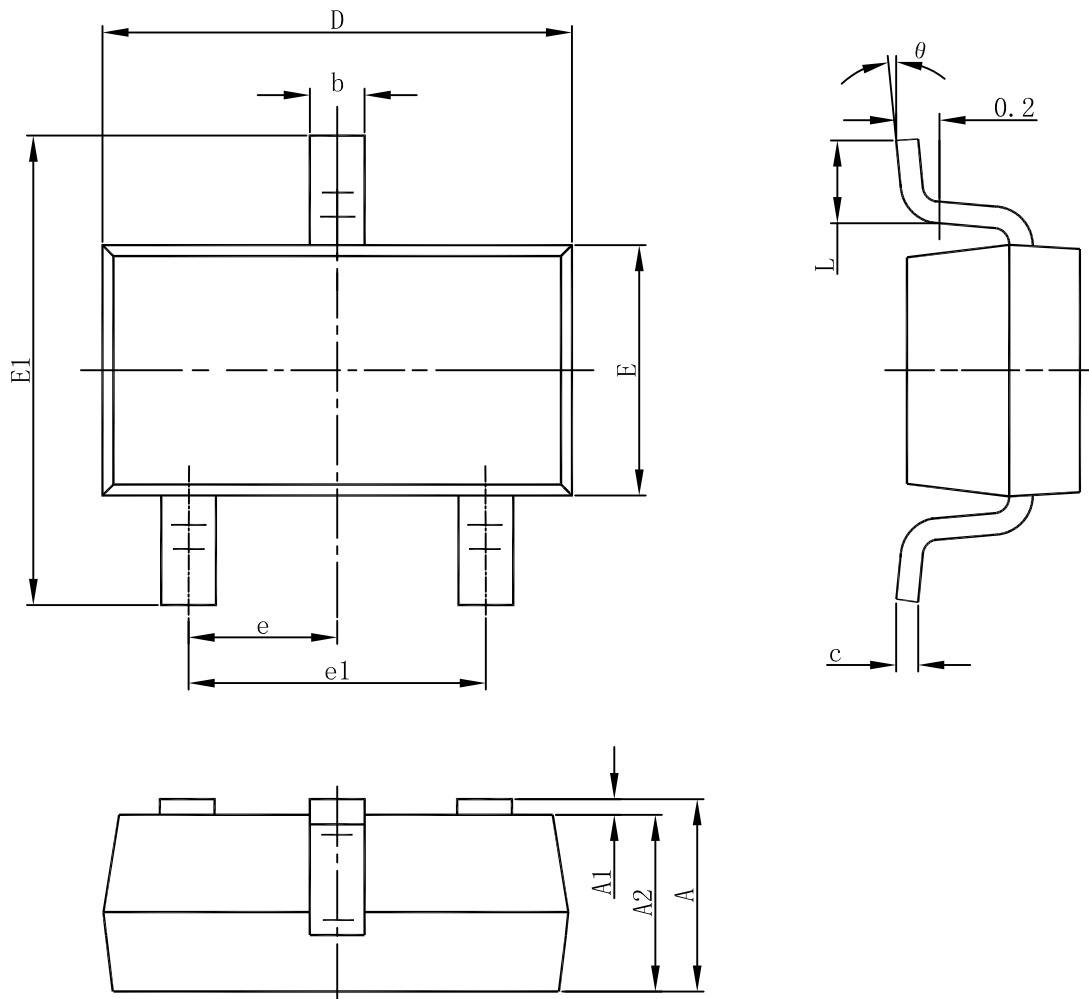
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = -250\mu\text{A}$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\mu\text{A}$	-1.5	-2.0	-2.5	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -4.1\text{ A}$		57	60	m Ω
		$V_{GS} = -10\text{ V}, I_D = -3.0\text{ A}$		57	60	
		$V_{GS} = -4.5\text{ V}, I_D = -4.0\text{ A}$		83	90	
		$V_{GS} = -4.5\text{ V}, I_D = -3.0\text{ A}$		83	90	
Forward Transconductance	g_{FS}	$V_{DS} = -5\text{ V}, I_D = -4.1\text{ A}$		7.6		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
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	$Q_{G(TOT)}$	$V_{GS} = -10\text{ V}, V_{DS} = -15\text{ V}, I_D = -4.1\text{ A}$		14.0		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.31		
Gate-to-Source Charge	Q_{GS}			2.0		
Gate-to-Drain Charge	Q_{GD}			2.45		
SWITCHING CHARACTERISTICS						
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		
BODY DIODE CHARACTERISTICS						
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

Gate Charge Characteristics



Package outline dimensions
SOT-23-3L


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	1.050	1.150	1.250
A1	0.000	0.050	0.100
A2	1.050	1.100	1.150
b	0.300	0.400	0.500
c	0.100	0.150	0.200
D	2.820	2.920	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
e	0.950(BSC)		
e1	1.800	1.900	2.000
L	0.300	0.450	0.600
θ	0°		8°