

WPM9435

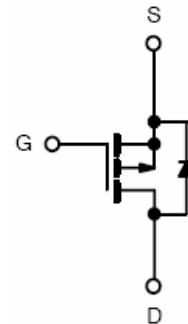
P-Channel Enhancement Mode MOSFET

www.willsemi.com

Description

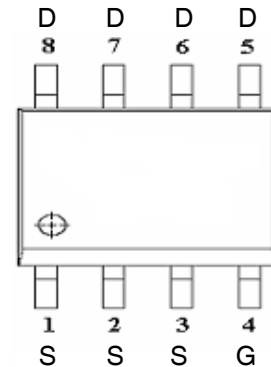
The WPM9435 is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

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.



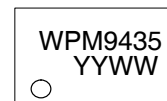
Features

- -30V/-5A, RDS(ON)= 36mΩ@VGS=- 10V
- -30V/-4A, RDS(ON)= 53mΩ@VGS=-4.5V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOP – 8P package design



Application

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



YYWW = Date Code
WPM9435 = Specific Device Code

Order information

Part Number	Part Number	Shipping
WPM9435-8/TR	SOP-8P	2500Tape&Reel

PIN DESCRIPTION

Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

Absolute Maximum Ratings (TA=25 unless otherwise specified)

Parameter	Symbol	Value	Units
V _{DS}	Drain-Source voltage	-30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	Steady-State TA=25°C	-5.5
		Steady-State TA=70°C	-4.4
I _{DM}	Pulse Drain Current	-25	A
P _D	Power Dissipation	TA=25°C	2.0
		TA=70°C	1.2
T _J	Operating Junction Temperature Range	-55~150	°C
T _{stg}	Storage Temperature Range		
R _{θJA}	Thermal Resistance-Junction to Ambient	62.5	°C/W

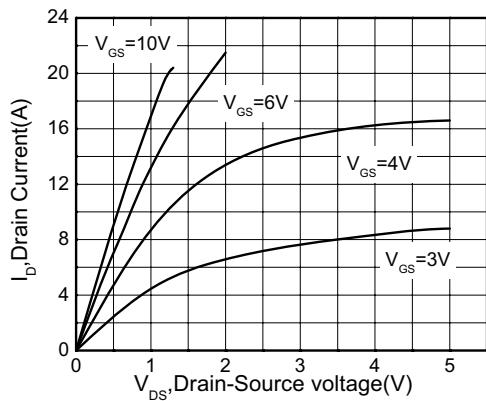
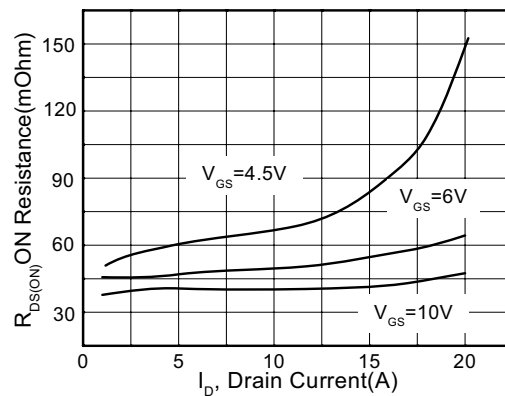
Electrical Characteristics

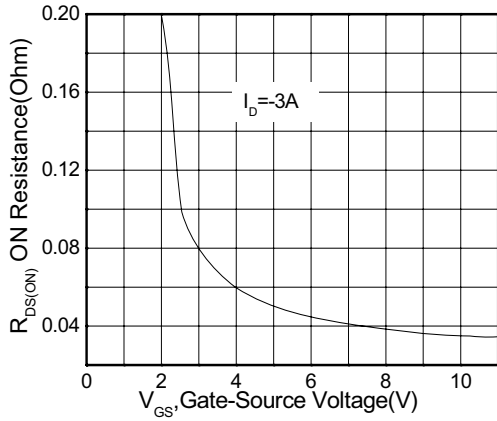
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250uA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-1.0	-2.0	-3.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V			-1	uA
		V _{DS} =-24V, V _{GS} =0V T _J =85°C			-10	
On-State Drain Current	I _{D(on)}	V _{DS} = -5V, V _{GS} =-4.5V	-10			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-5.0A		0.036	0.046	Ω
		V _{GS} =-4.5V, I _D =-4.0A		0.053	0.066	
Forward Transconductance	g _{fs}	V _{DS} =- 5V, I _D =-5A		8		S
Diode Forward Voltage	V _{SD}	I _S =-1.3A, V _{GS} =0V		-0.79	-1.5	V

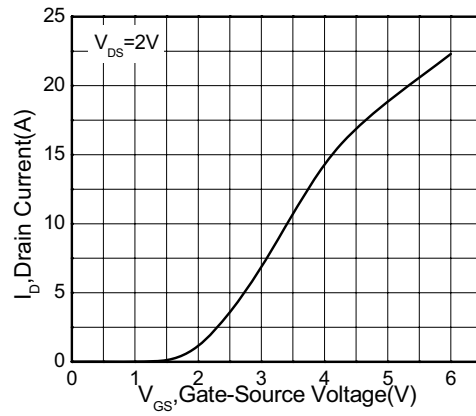
Dynamic

Total Gate Charge	Q_g	$V_{DS}=-15V, V_{GS}=-10V$ $I_D = -3.5A$	10	18	nC
Gate-Source Charge	Q_{gs}		1.6		
Gate-Drain Charge	Q_{gd}		3.0		
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V$ $f=1MHz$	710		pF
Output Capacitance	C_{oss}		115		
Reverse Transfer Capacitance	C_{rss}		100		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=15\Omega$ $I_D=-1.0A, V_{GEN}=-10V$ $R_G=6\Omega$	8	18	nS
	t_r		8	18	
Turn-Off Time	$t_{d(off)}$		25	50	
	t_f		25	35	

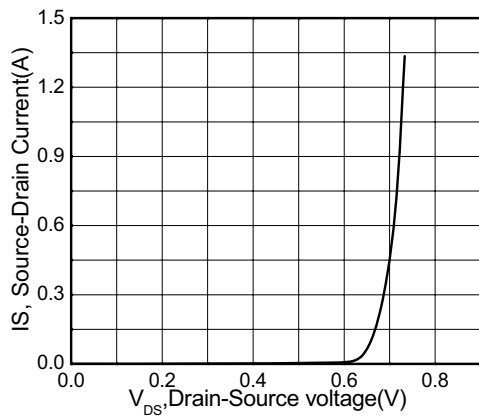
Typical Performance Characteristics

Drain Current VS Drain-Source voltage

Drain Current vs ON Resistance



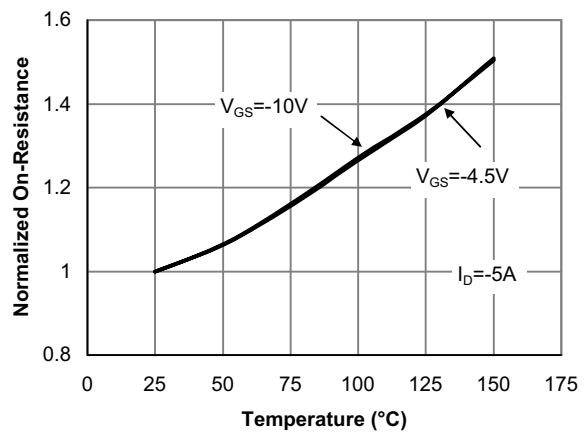
Gate-Source Voltage vs ON Resistance



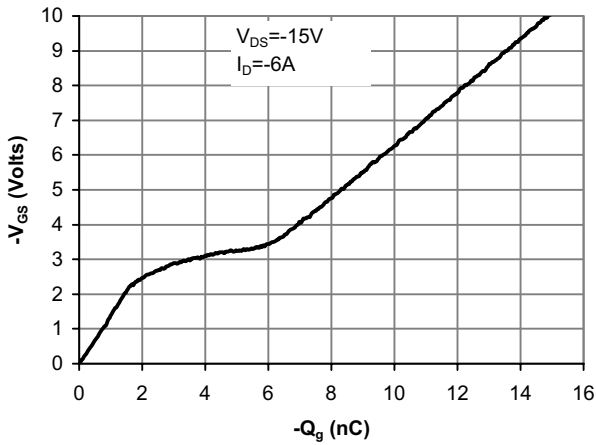
Drain Current VS Gate-Source Voltage



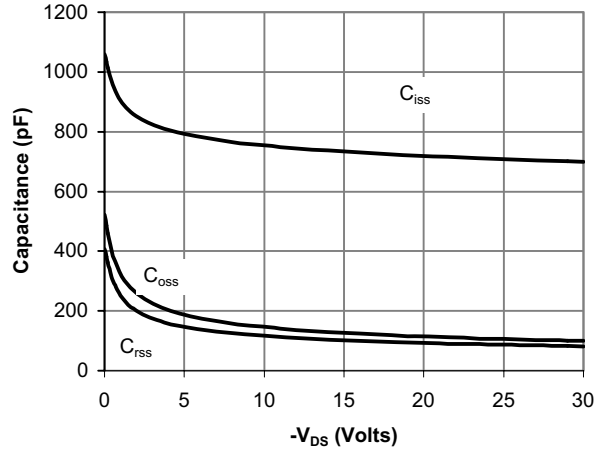
Drain Current VS Source-Drain Current



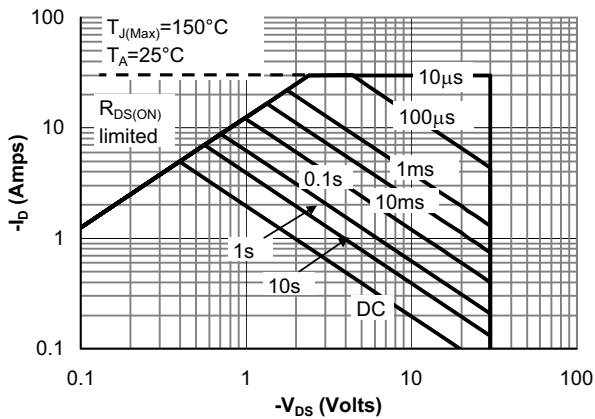
On-Resistance vs. Junction



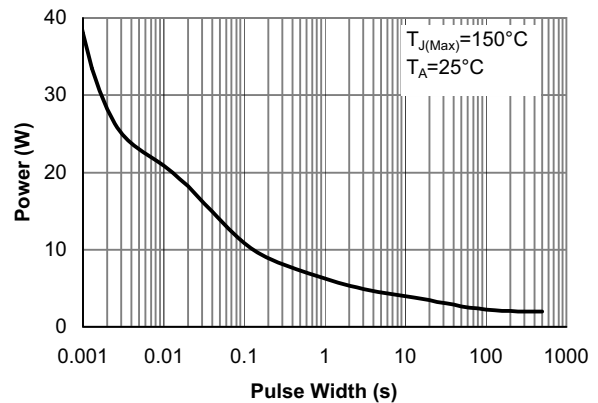
Gate-Charge Characteristics



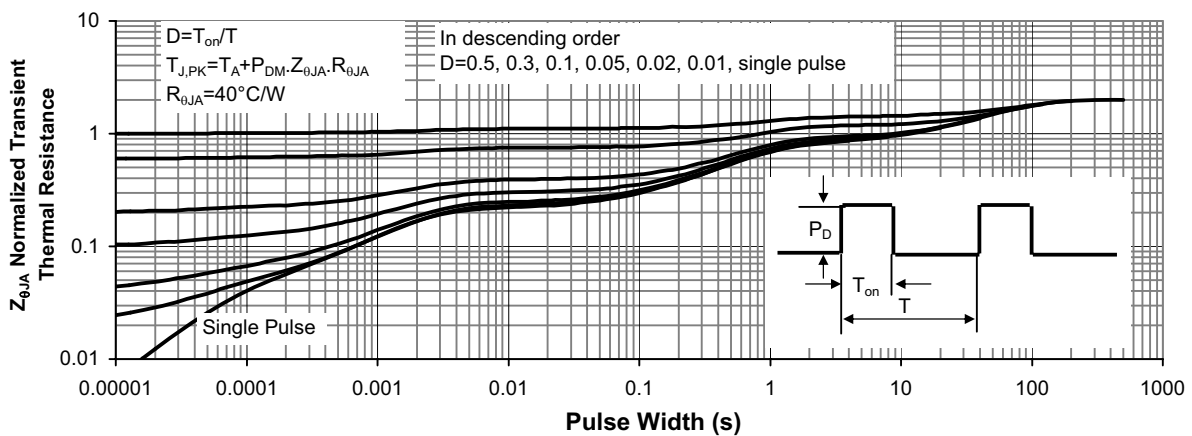
Capacitance Characteristics



Maximum Forward Biased Safe Operating Area (Note E)



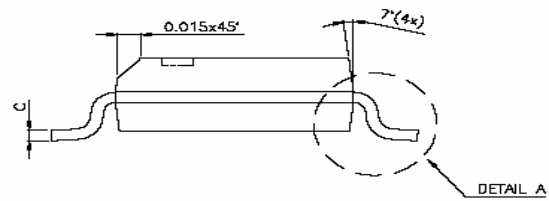
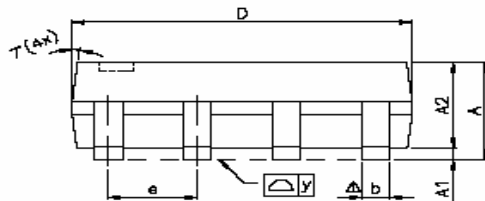
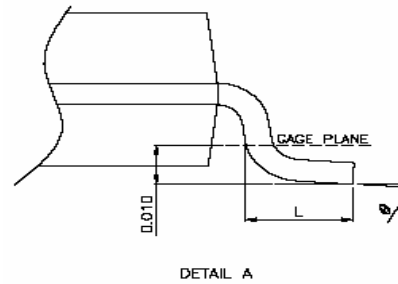
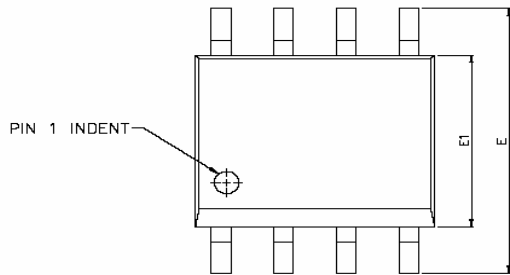
Single Pulse Power Rating Junction-to-Ambient (Note E)



Normalized Maximum Transient Thermal Impedance

Packaging Information

SOP-8P Package Outline Dimension



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
Δ y	—	—	0.076	—	—	0.003
θ	0°	—	8°	0°	—	8°