



**WANSEMI**  
万芯半导体

**WP4435**

# **Enhancement Mode P-Channel Power MOSFET**

SOP8/PMOS/-30V/ $\pm 20V$ /-1.5V/-11A/16m $\Omega$

Rev1.2

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## -30V, 16mΩ, -11A, P-Channel MOSFET

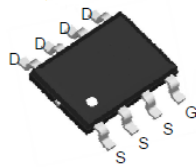
### 1.Features

- ◆ High power and current handling capability
- ◆ Surface mount package

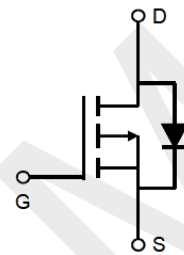
### 2.Applications

- ◆ Power Management
- ◆ Load Switching

$V_{DS}$	$R_{DS(on)}$ Typ.	$I_D$
-30V	16mΩ @ -10V	-11A
	25mΩ @ -4.5V	



SOP8  
Pin Description



Schematic Diagram

### 3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP4435	4435	SOP8	3,000	60,000

### 3.Absolute Max Ratings at Ta=25°C (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	$V_{DSS}$	-30	V
Gate to Source Voltage	$V_{GSS}$	±20	V
Drain Current (DC)	$I_D$	-11	A
Drain Current (Pulse), $PW \leq 300\mu s$	$I_{DP}$	-44	A
Total Dissipation	$P_D$	14	W
Junction Temperature	$T_j$	150	°C
Storage Temperature	$T_{stg}$	-55 to +150	°C

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### 4.Thermal Resistance Ratings (Note 2)

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	75	°C/W

Note 2: When mounted on 1 inch square copper board  $t \leq 10$ sec The value in any given application depends on the user's specific board design.

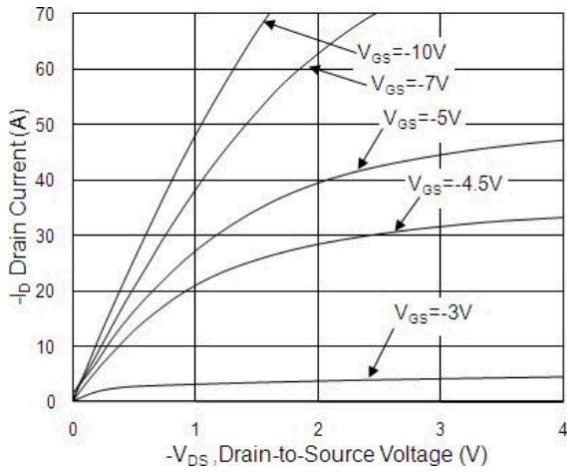
**5. Electrical Characteristics at Ta=25°C (Note 3)**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -250\mu A, V_{GS} = 0V$	-30	-	-	V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30V, V_{GS} = 0V$	-	-	-1	$\mu A$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.0	-1.5	-2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = -15A, V_{GS} = -10V$	-	16	20	m $\Omega$
		$I_D = -10A, V_{GS} = -4.5V$	-	25	32	m $\Omega$
Input Capacitance	$C_{iss}$	$V_{GS}=0V,$	-	1150	-	pF
Output Capacitance	$C_{oss}$	$V_{DS}=-15V,$	-	150	-	pF
Reverse Transfer Capacitance	$C_{rss}$	Frequency=1.0MHz	-	134	-	pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{DD} = -15V, V_{GS} = -10V,$ $R_{GEN} = 3.3\Omega, I_D = -15A$	-	13	-	ns
Rise Time	$t_r$		-	15	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	198	-	ns
Fall Time	$t_f$		-	98	-	ns
Total Gate Charge	$Q_g$	$V_{DS} = -15V,$	-	52	-	nC
	$Q_{gs}$	$V_{GS} = -4.5V,$	-	9.8	-	nC
	$Q_{gd}$	$I_D = -15A$	-	8.3	-	nC
Diode Forward Voltage	$V_{FSD}$	$I_S = -1A, V_{GS} = 0$	-	-	-1.2	V

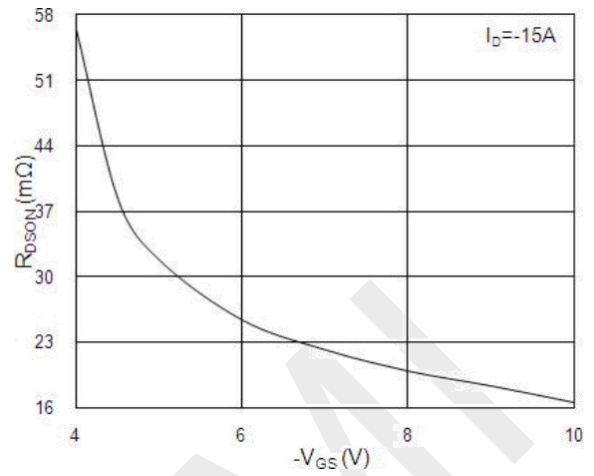
Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



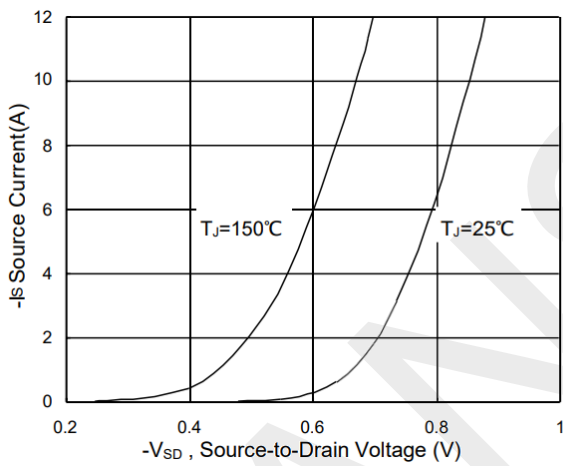
**6. Typical Electrical and Thermal Characteristics**



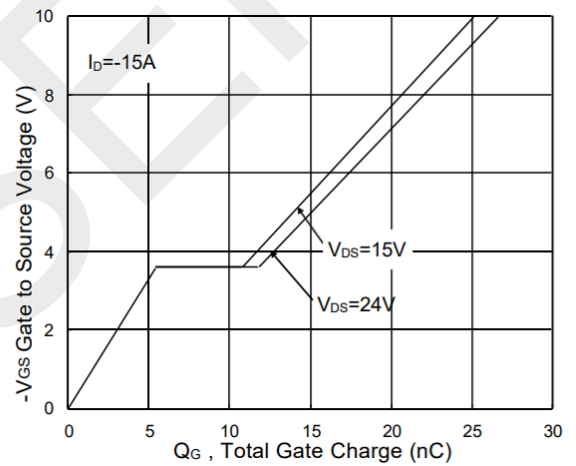
**On-Region Characteristics**



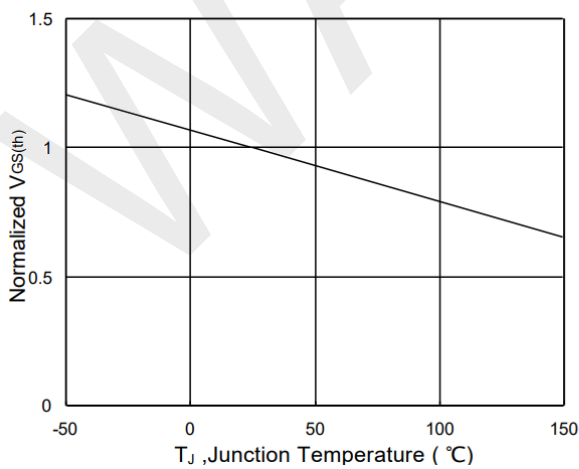
**On-Resistance v.s Gate-Source**



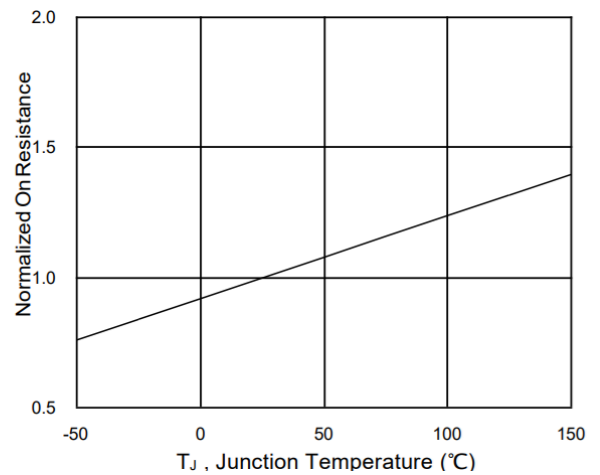
**Forward Characteristics of Reverse**



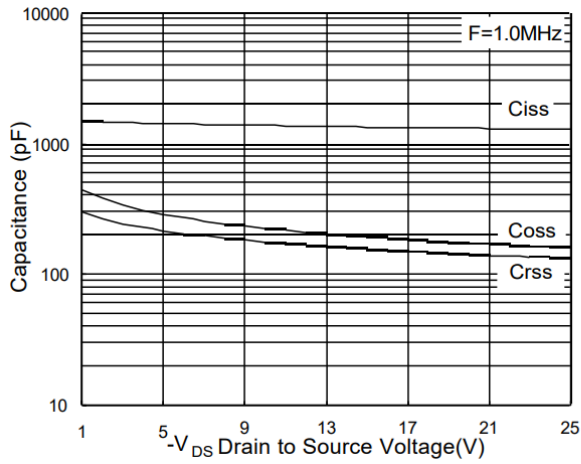
**Gate-Charge Characteristics**



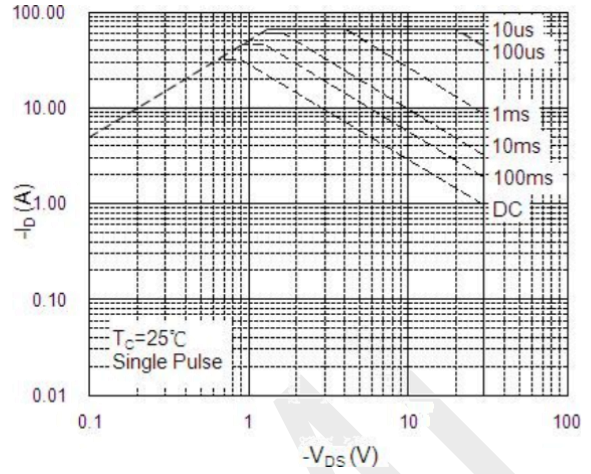
**Normalized  $V_{GS(th)}$  vs.  $T_J$**



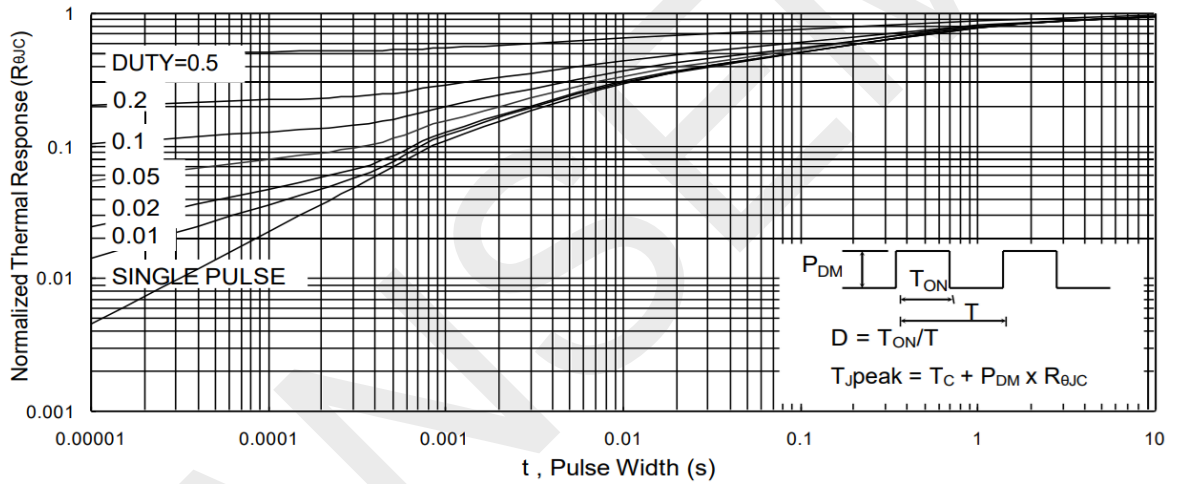
**Normalized  $R_{DS(on)}$  vs.  $T_J$**



Capacitance



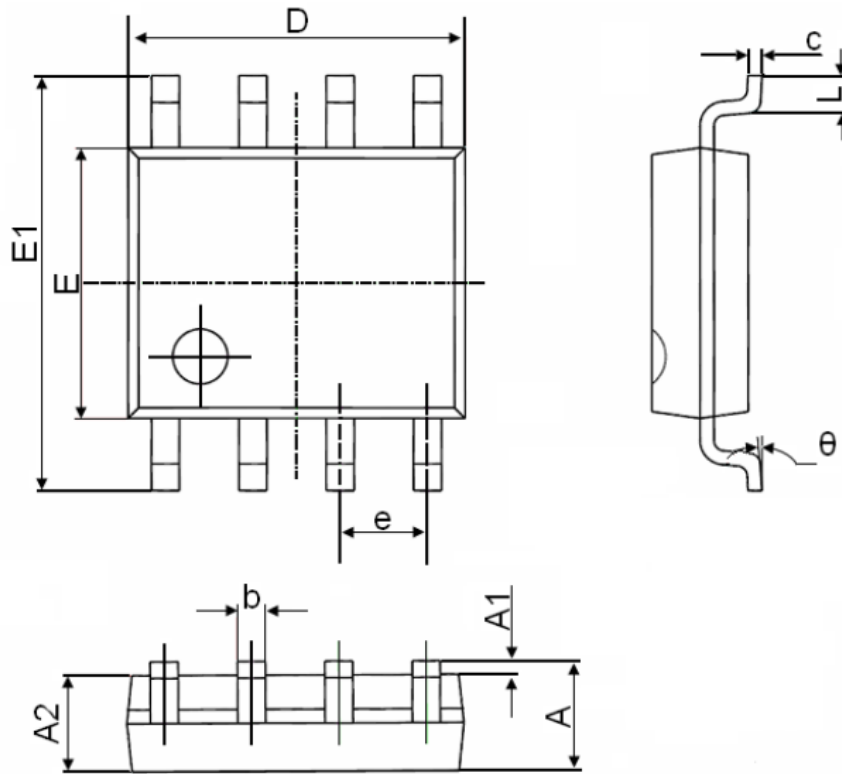
Safe Operating Area



Normalized Maximum Transient Thermal Impedance



**8.Package Dimensions**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
theta	0°	8°	0°	8°

## **8.Important Notice**

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