WANSEMI
万芯半导体

WP8N60FA

Enhancement Mode N-Channel Power MOSFET

TO-220F/NMOS/600V/±30V/3V/8A/965mΩ

Rev0.6

Enhancement Mode N-Channel Power MOSFET

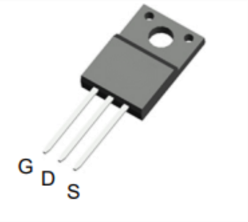
1.Features

- Fast Switching
- Improved dv/dt Capability

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
600V	965mΩ @ 10V	8A

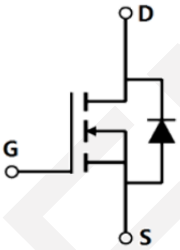
2.Applications

- Load Switch
- PWM Application
- Power management



Pin Description

TO-220F



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP8N60FA	WP8N60	TO-220F	50	5,000

4.Absolute Max Ratings at Ta=25℃ (Note1)

Parameter	Symbol	Value	Units
Drain to Source Voltage	V_{DS}	600	V
Gate to Source Voltage	V_{GS}	±30	V
Drain Current (DC)	I_D	8	A
Drain Current (Pulse), PW≤300μs	I_{DP}	32	A
Total Dissipation	P_D	27	W
Avalanche Energy, Single Pulsed	E_{AS}	265	mJ
Junction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-55 to +150	℃

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.

5.Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to case	$R_{\theta JC}$	4.7	℃/W
Junction to ambient	$R_{\theta JA}$	55	℃/W

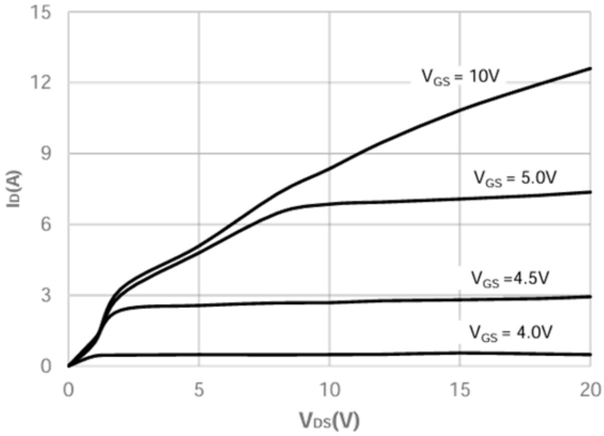
Note 2：When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

6.Electrical Characteristics at Ta=25℃ (Note 3)

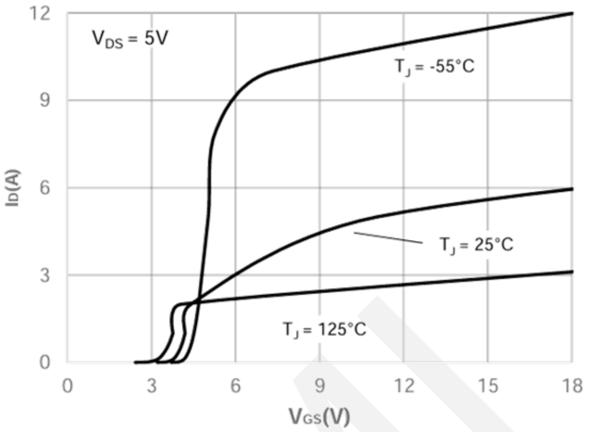
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	600	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 600V, V_{GS} = 0V	-	-	1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±30V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	2.0	3.0	4.0	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 4A, V_{GS} = 10V	-	965	1150	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, Frequency=1.0MHz	-	1142	-	pF
Output Capacitance	C_{oss}		-	105	-	pF
Reverse Transfer Capacitance	C_{rss}		-	13	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS} = 300V, I_D = 4A, R_G = 24Ω	-	20	-	ns
Rise Time	t_r		-	23	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	80	-	ns
Fall Time	t_f		-	30	-	ns
Total Gate Charge	Q_g	V_{DS} = 300V, V_{GS} = 0 to 10V, I_D = 4A	-	25	-	nC
	Q_{gs}		-	6	-	nC
	Q_{gd}		-	8	-	nC
Diode Forward Voltage	V_{FSD}	I_S = 4A, V_{GS} = 0	-	0.9	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.

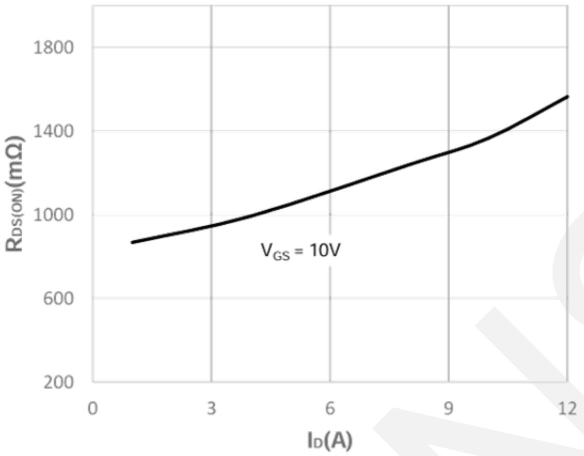
7.Typical electrical and thermal characteristics



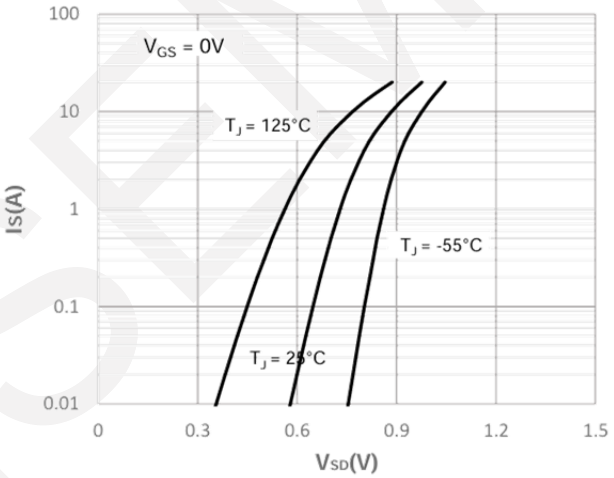
On-Region Characteristics



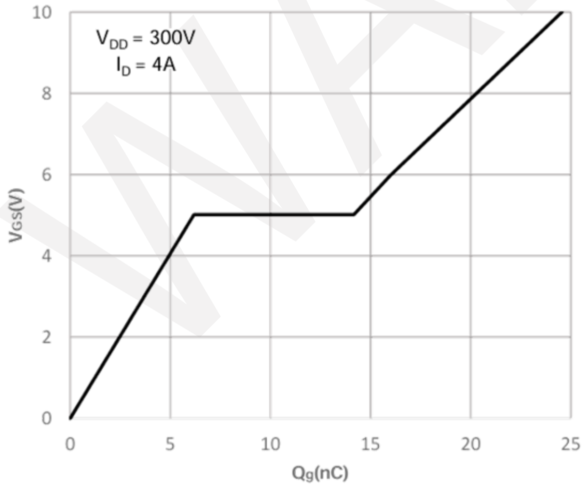
Transfer Characteristics



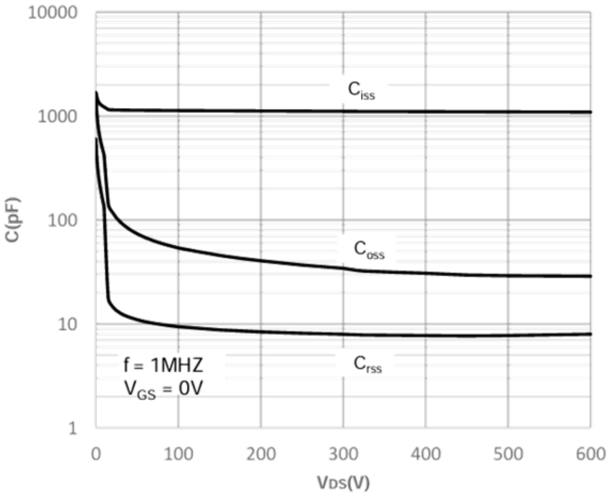
On-Resistance vs. Drain Current and Gate Voltage



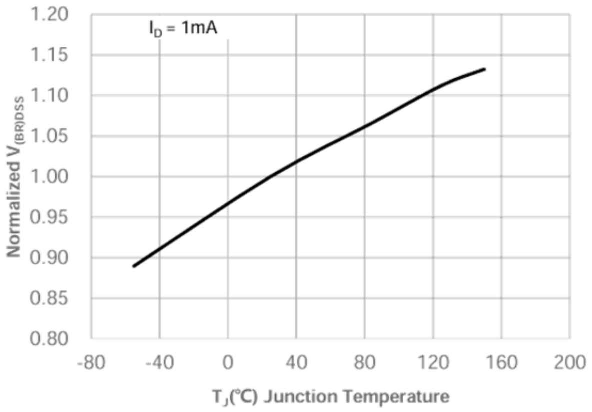
Body Diode Characteristics



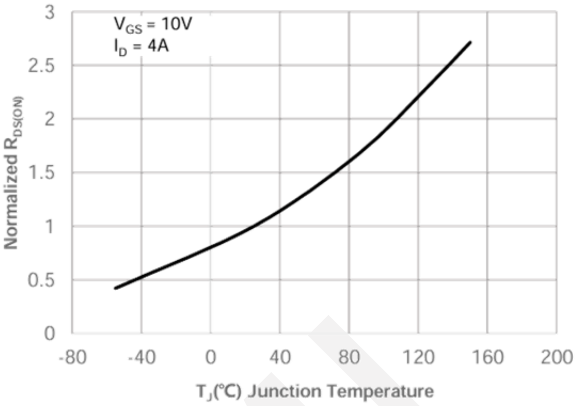
Gate Charge Characteristics



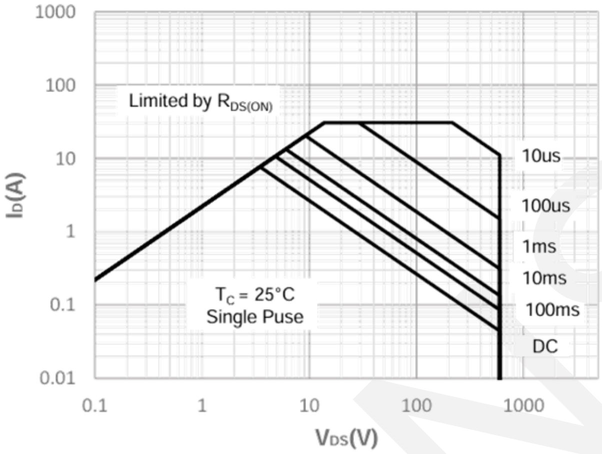
Capacitance Characteristics



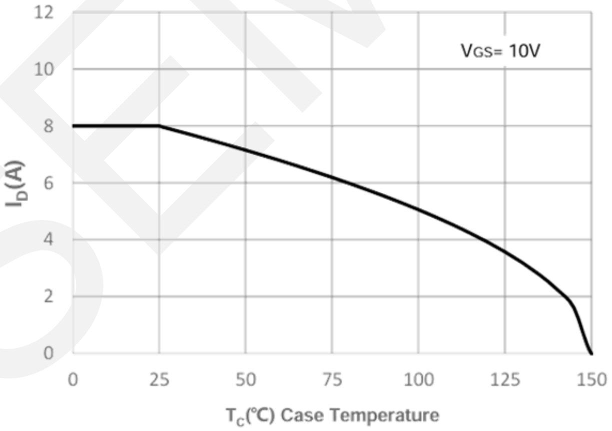
Normalized Breakdown voltage vs. Junction Temperature



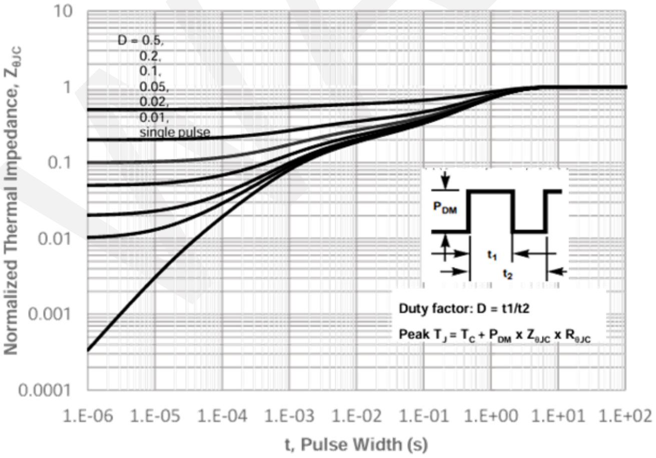
Normalized on Resistance vs. Junction Temperature



Maximum Forward Biased Safe Operating Area



Current De-rating

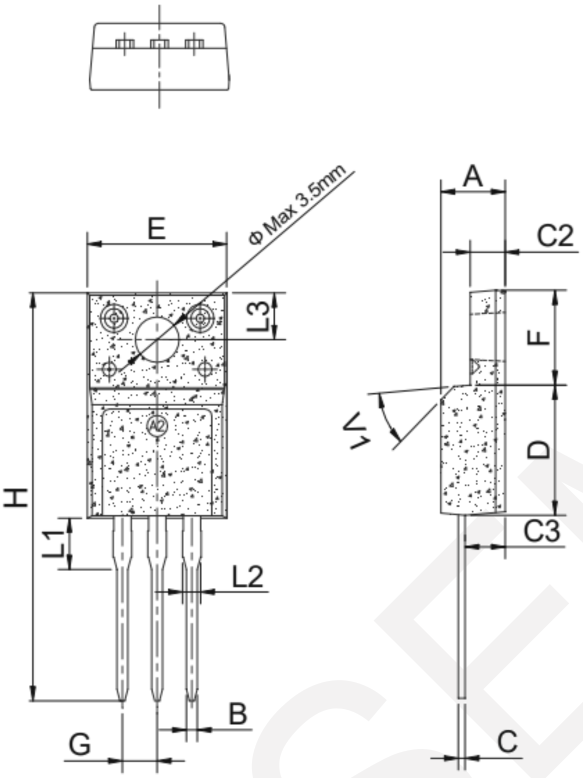


Duty factor: D = t1/t2

Peak $T_J = T_C + P_{DM} \times Z_{\theta JC} \times R_{\theta JC}$

Normalized Maximum Transient Thermal Impedance

8.Package Dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

9. Important Notice

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