



WANSEMI
万芯半导体

WP70R360FA

Enhancement Mode N-Channel Power MOSFET

TO-220F/NMOS/700V/ ± 30 V/3.6V/14A/320m Ω

Rev0.7

Enhancement Mode N-Channel Power MOSFET

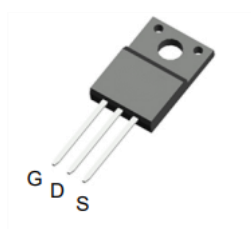
1.Features

- ◆ Low $R_{DS(on)}$ & FOM
- ◆ Extremely low switching loss
- ◆ Excellent stability and uniformity

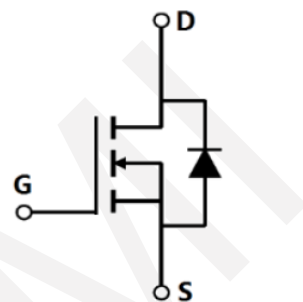
V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
700V	320mΩ @ 10V	14A

2.Applications

- ◆ PC power
- ◆ LED lighting
- ◆ Telecom power
- ◆ Server power
- ◆ EV Charger
- ◆ Solar/UPS



Pin Description
TO-220F



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Tube	PCS/CTN.
WP70R360FA	WP70R360	TO-220F	50	5,000

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

Parameter	Symbol	Value	Units
Drain to Source Voltage	V_{DS}	700	V
Gate to Source Voltage	V_{GS}	±30	V
Drain Current (DC)	I_D	14	A
Drain Current (Pulse), $PW \leq 300\mu s$	I_{DP}	37	A
Total Dissipation	P_D	32	W
Avalanche Energy, Single Pulsed	E_{AS}	400	mJ
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.

5. Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to case	$R_{\theta JC}$	3.9	$^{\circ}\text{C/W}$
Junction to ambient	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$

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

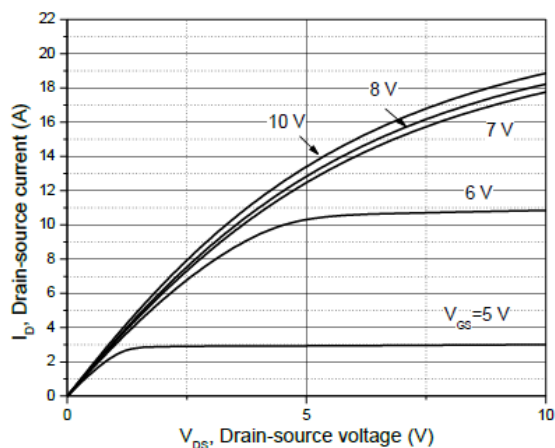
6. Electrical Characteristics at $T_a=25^{\circ}\text{C}$ (Note 3)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$	650			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 650\text{V}$, $V_{GS} = 0\text{V}$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 30\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_{DS}=250\mu\text{A}$	2	3.6	4	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = 6\text{A}$, $V_{GS} = 10\text{V}$	-	0.320	0.359	Ω
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=50\text{V}$, Frequency=1.0MHz		1007.1		pF
Output Capacitance	C_{oss}			63.8		pF
Reverse Transfer Capacitance	C_{rss}			2.1		pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{DS} = 400\text{V}$, $I_D = 6\text{A}$ $V_{GS} = 10\text{V}$, $R_G = 25\Omega$		31.3		ns
Rise Time	t_r			16.8		ns
Turn-OFF Delay Time	$t_{d(off)}$			55.4		ns
Fall Time	t_f			24.5		ns
Total Gate Charge	Q_g	$V_{DS} = 400\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 6\text{A}$		16.7		nC
	Q_{gs}			4.8		nC
	Q_{gd}			5.3		nC
Diode Forward Voltage	V_{FSD}	$I_S = 6\text{A}$, $V_{GS} = 0$	0.5	0.9	1.4	V

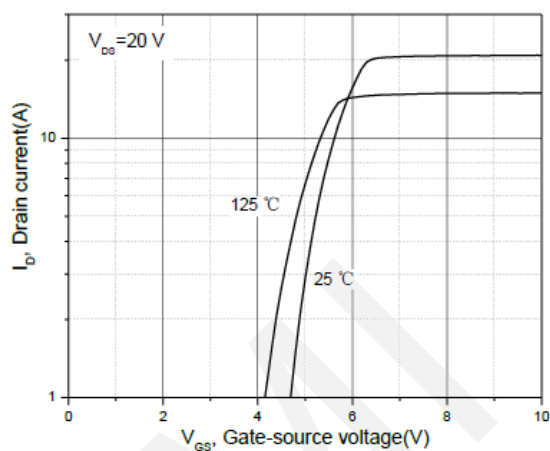
Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



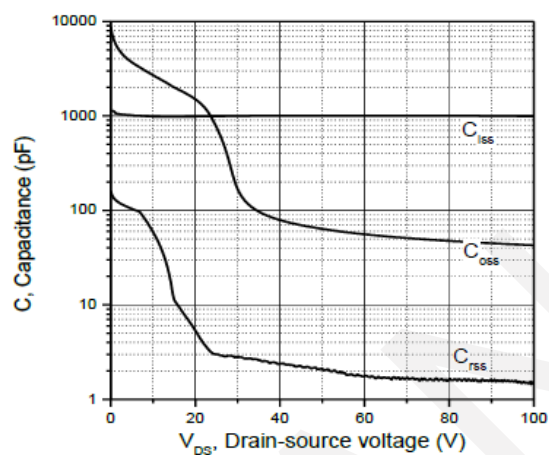
7. Typical electrical and thermal characteristics



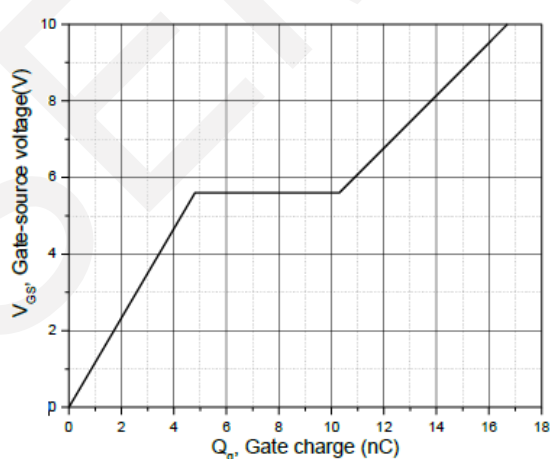
Output Characteristics



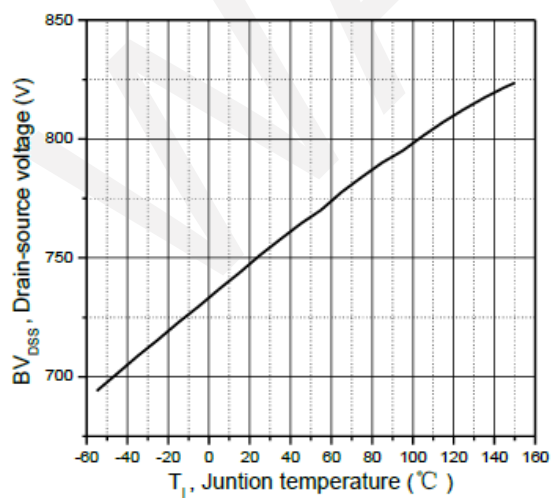
Transfer Characteristics



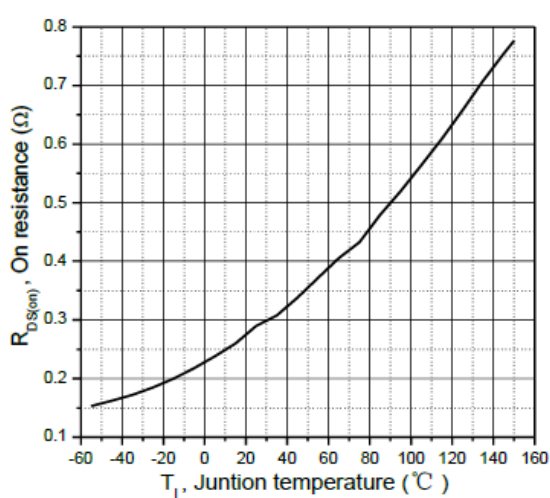
Capacitance



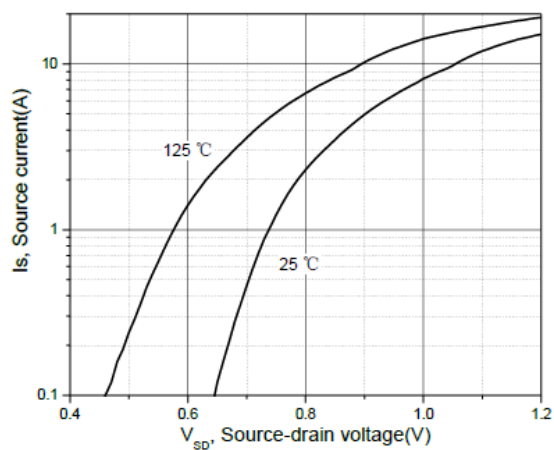
Gate Charge



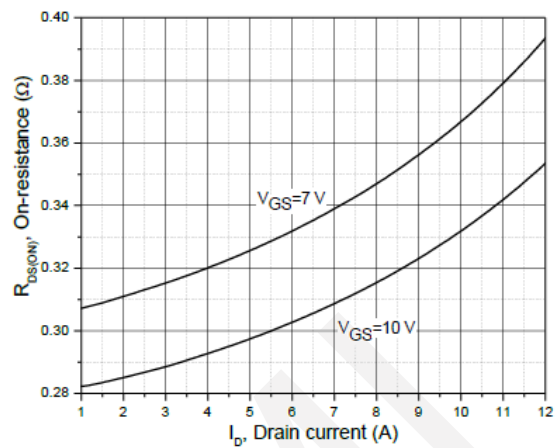
Drain-source breakdown voltage



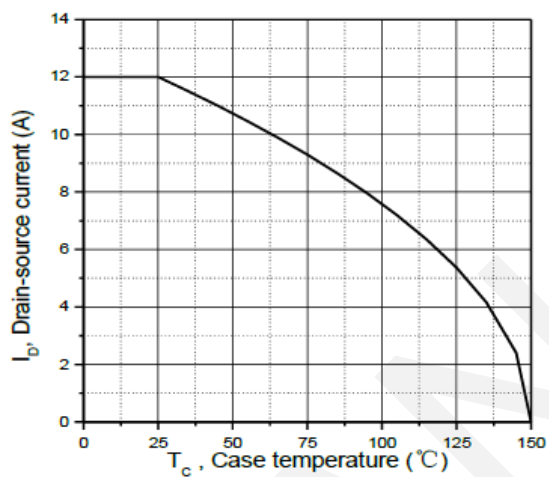
Drain-source on-state resistance



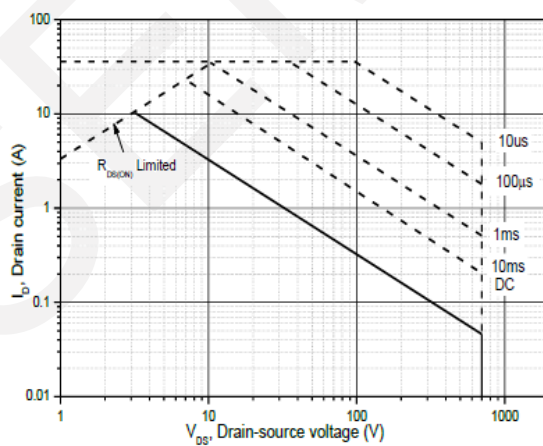
Forward characteristic of body diode



Drain-source on-state resistance

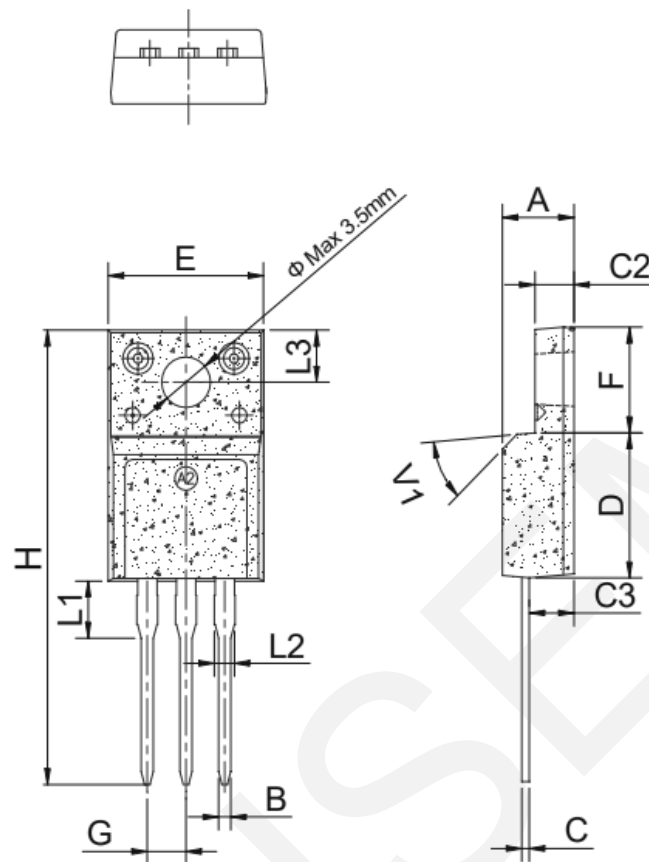


Drain current



Safe operation area $T_C=25^\circ\text{C}$

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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