WANSEMI
万芯半导体

WP3040AP3

Enhancement Mode N-Channel Power MOSFET

PDFN3X3/NMOS/30V/±20V/1.6V/40A/4.2mΩ

Rev1.1

30V, 4.2mΩ, 40A, Single N-Channel

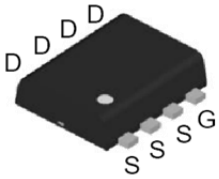
1.Features

- 30V MOSFET technology
- Low on-state resistance
- Fast switching
- Vgs±20V

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
30V	4.2mΩ @ 10V	40A
	6.7mΩ @ 4.5V	

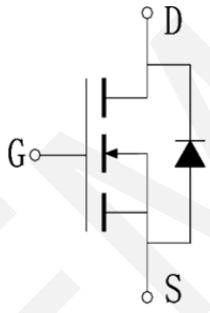
2.Applications

- Power Switching Application
- Load Switching



PDFN3x3

Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP3040AP3	WP3040AP3	PDFN3x3	5,000	50,000

4.Absolute Max Ratings at Ta=25℃ (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	40	A
Drain Current (Pulse), PW≤300μs	I_{DP}	160	A
Total Dissipation	P_D	35	W
Avalanche Energy, Single Pulsed	E_{AS}	144	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 (Note 2)

Parameter	Symbol	Value	Unit
Junction to case	$R_{\theta JC}$	3.6	℃/W
Junction to Ambient	$R_{\theta JA}$	43	℃/W

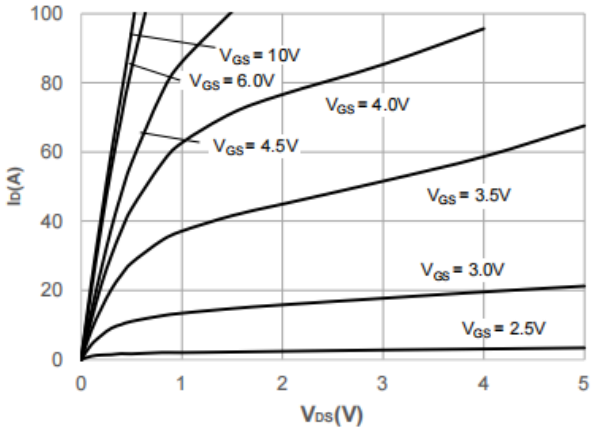
Note 2: When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

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

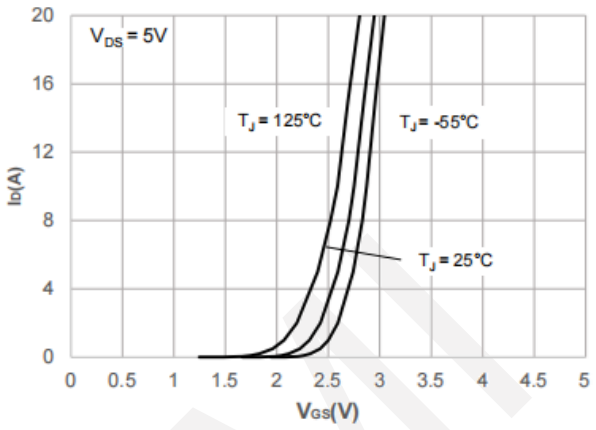
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V			1.0	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	1.0	1.6	2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 20A, V_{GS} = 10V		4.2	5.5	mΩ
		I_D = 20A, V_{GS} = 4.5V		6.7	8.5	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz		1790		pF
Output Capacitance	C_{oss}			225		pF
Reverse Transfer Capacitance	C_{rss}			180		pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} = 15V, I_{DS} = 30A, V_{GS} = 10V, R_G = 3Ω		7		ns
Rise Time	t_r			15		ns
Turn-OFF Delay Time	$t_{d(off)}$			34		ns
Fall Time	t_f			10		ns
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 0 to 10V, I_{DS} = 30A		34		nC
	Q_{gs}			6.5		nC
	Q_{gd}			7.5		nC
Diode Forward Voltage	V_{FSD}	I_S = 20A, V_{GS} = 0V		0.85	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.

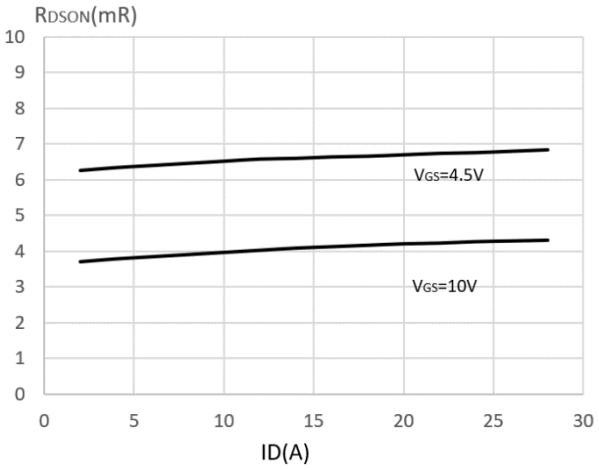
7.Typical electrical and thermal characteristics



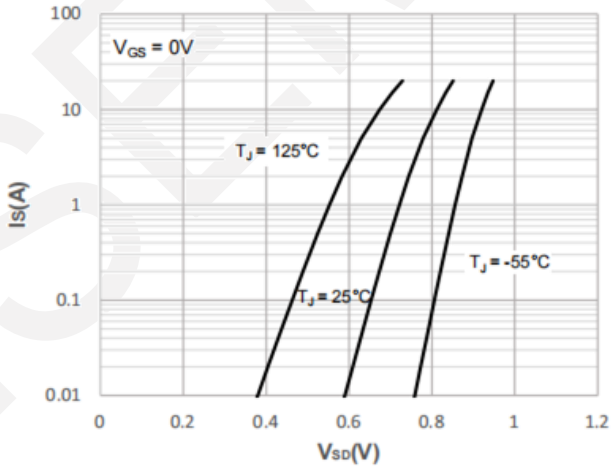
Output Characteristics



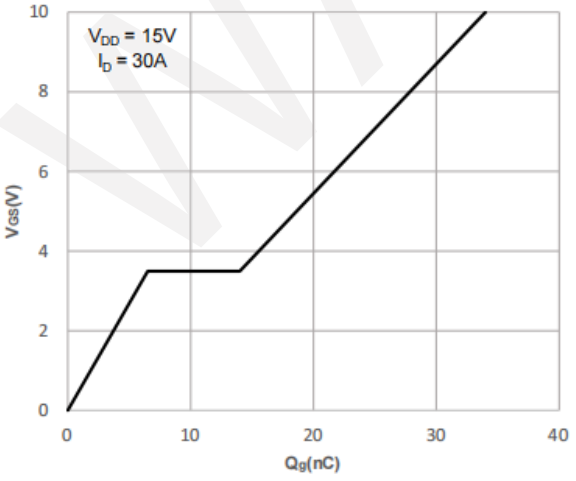
Typical Transfer Characteristics



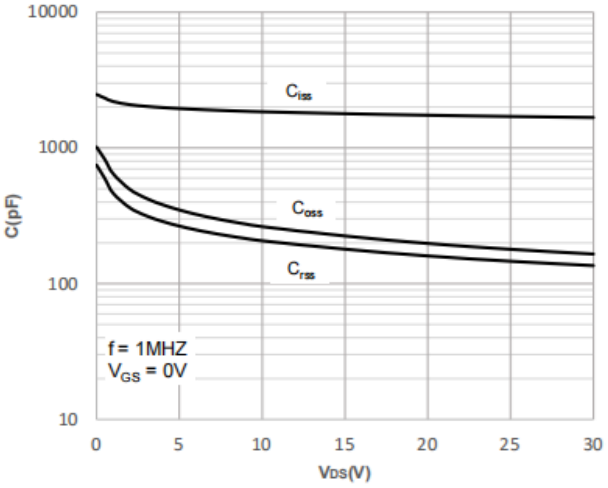
On-resistance vs. Drain Current



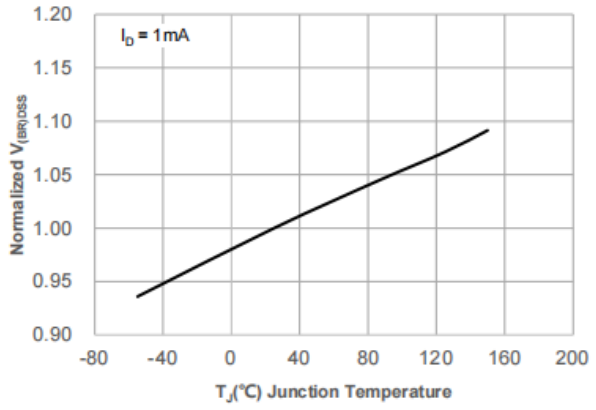
Body Diode Characteristics



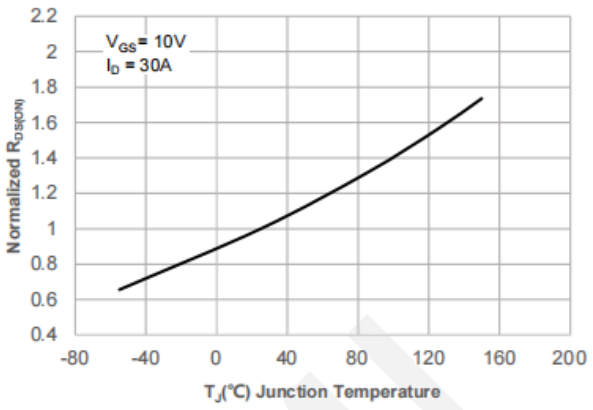
Gate Charge Characteristics



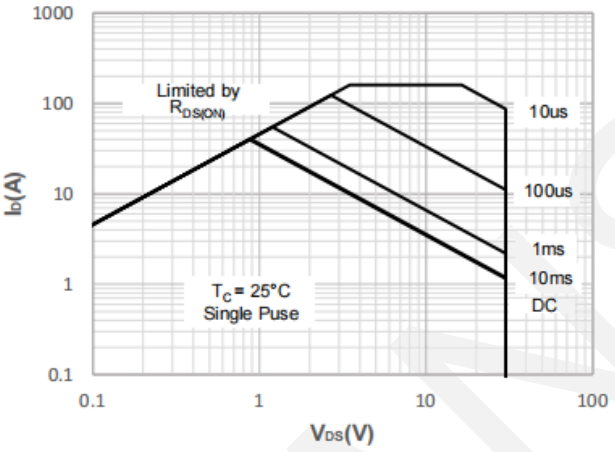
Capacitance Characteristics



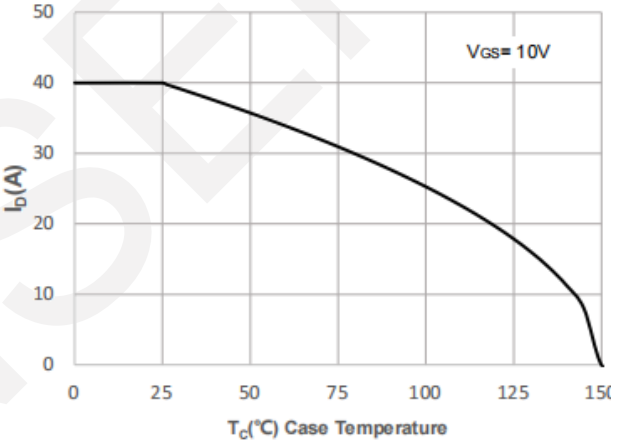
Normalized Breakdown Voltage vs. Junction Temperature



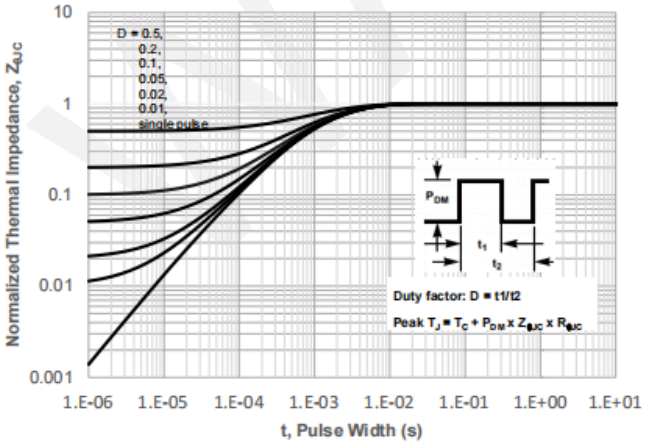
Normalized on Resistance vs. Junction Temperature



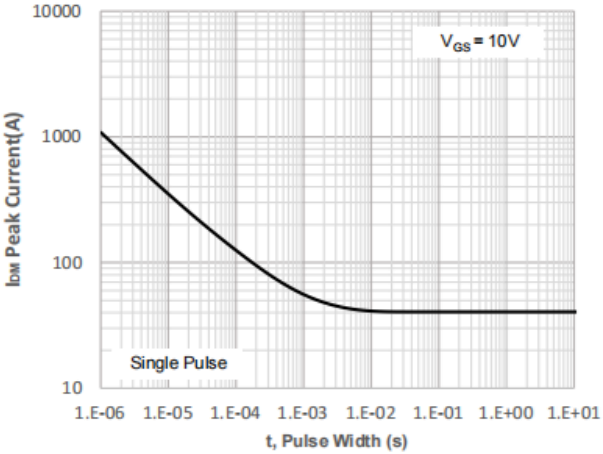
Maximum Safe Operating Area



Maximum Continuous Drain Current vs. Case Temperature

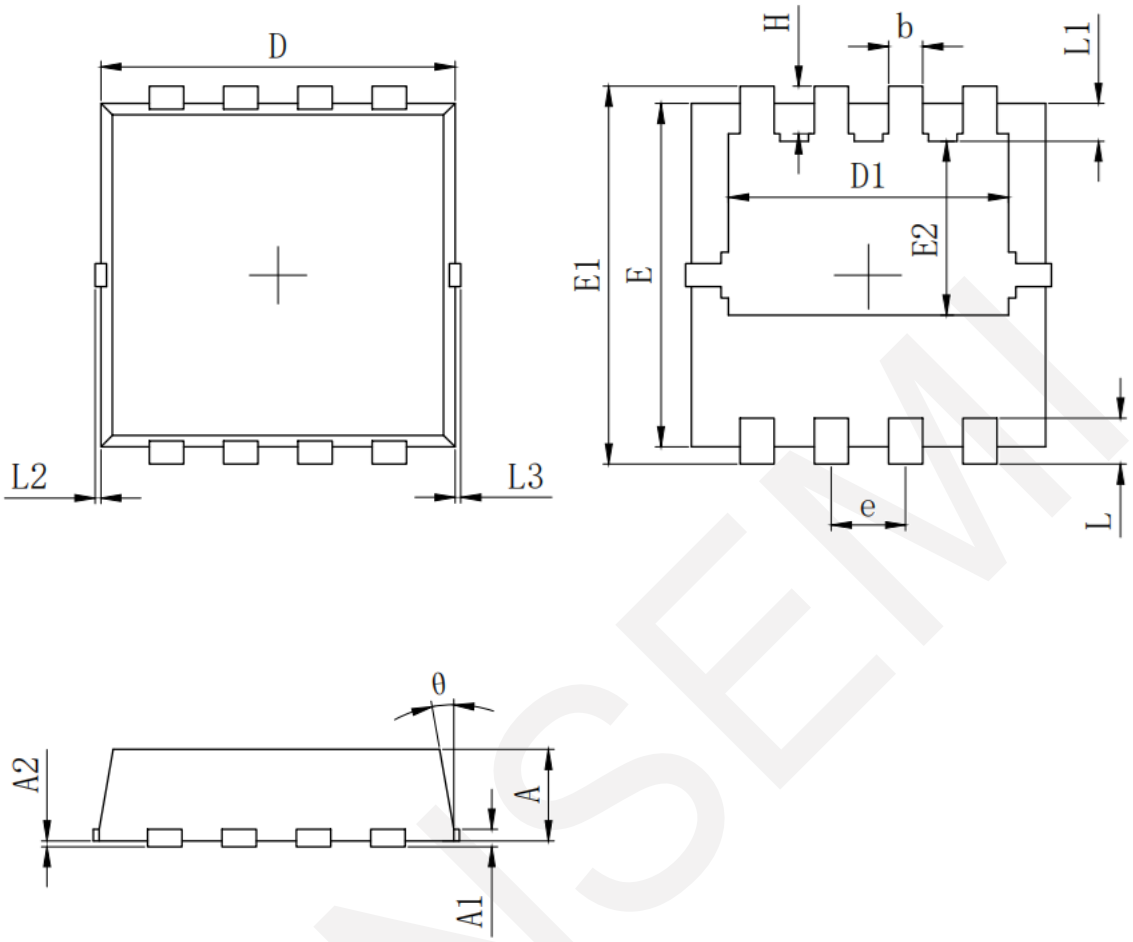


Normalized Maximum Transient Thermal Impedance



Peak Current Capacity

8.Package Dimensions



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152 REF.		
A2	0~0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.320	1.520	1.720
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0~0.100		
L3	0~0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°

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