WP7N65KD

Enhancement Mode N-Channel Power MOSFET

TO-252/NMOS/650V/±30V/3V/7A/1.15Ω

Rev0.5

Enhancement Mode N-Channel Power MOSFET

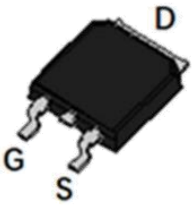
1.Features

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
650V	1.15Ω @ 10V	7A

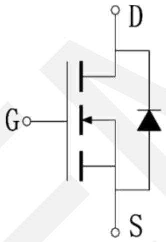
- Fast Switching
- Improved dv/dt Capability

2.Applications

- Load Switch
- PWM Application
- Power management



TO-252
Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP7N65KD	WP7N65	TO-252	2,500	25,000

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

Parameter	Symbol	Value	Units
Drain to Source Voltage	V_{DS}	650	V
Gate to Source Voltage	V_{GS}	±30	V
Drain Current (DC)	I_D	7	A
Drain Current (Pulse), PW≤300μs	I_{DP}	28	A
Total Dissipation	P_D	63	W
Avalanche Energy, Single Pulsed	E_{AS}	198	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.

4.Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to case	$R_{\theta JC}$	1.98	°C/W
Junction to ambient	$R_{\theta JA}$	62.5	°C/W

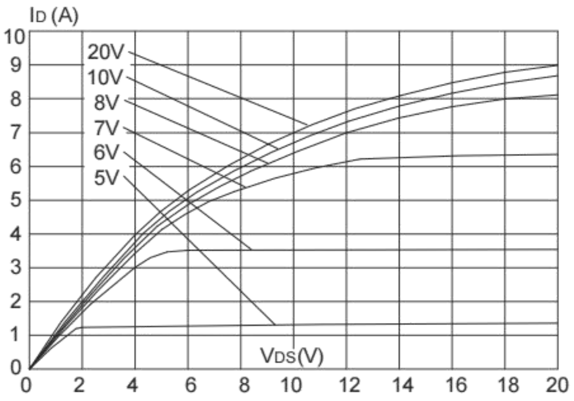
Note 2 : When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

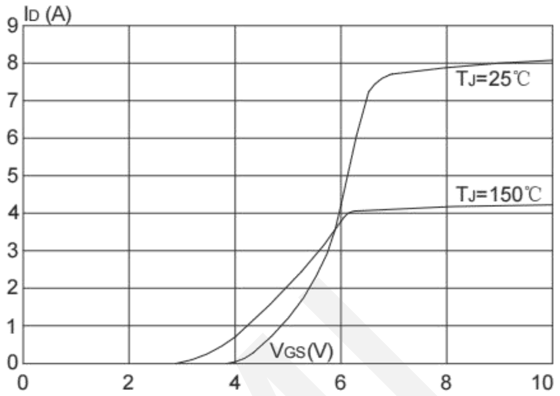
5.Electrical Characteristics at Ta=25℃ (Note 3)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	650			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 650V, 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	3	4	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 3.5A, V_{GS} = 10V	-	1.15	1.35	Ω
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, Frequency=1.0MHz		1148		pF
Output Capacitance	C_{oss}			106		pF
Reverse Transfer Capacitance	C_{rss}			12		pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} = 325V, I_D = 7A, R_G = 25Ω		15		ns
Rise Time	t_r			18		ns
Turn-OFF Delay Time	$t_{d(off)}$			80		ns
Fall Time	t_f			35		ns
Total Gate Charge	Q_g	V_{DS} = 520V, V_{GS} = 10V, I_D = 7A		22		nC
	Q_{gs}			4.3		nC
	Q_{gd}			13		nC
Diode Forward Voltage	V_{FSD}	I_S = 7A, V_{GS} = 0	0.5	0.8	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.

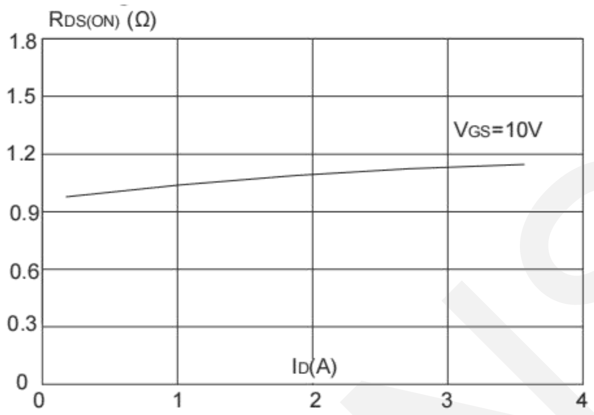
6.Typical electrical and thermal characteristics

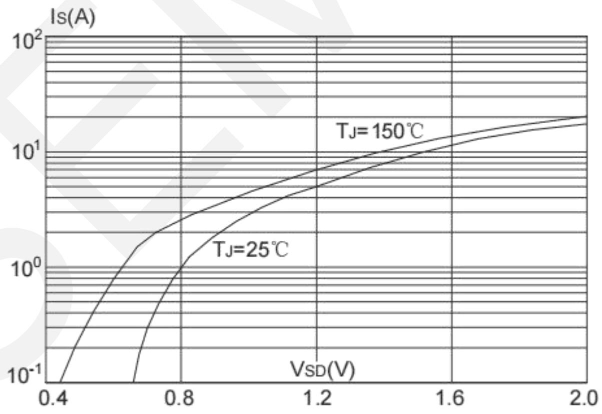




Output Characteristics

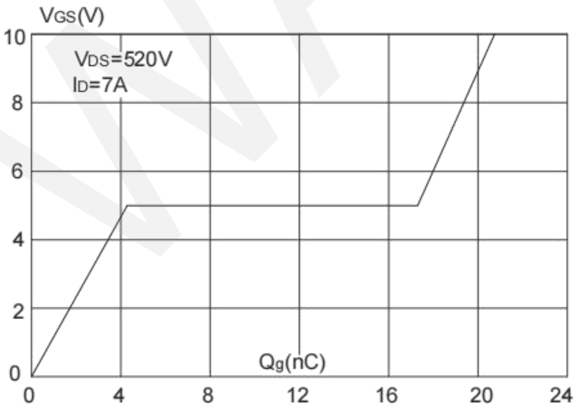
Transfer Characteristics

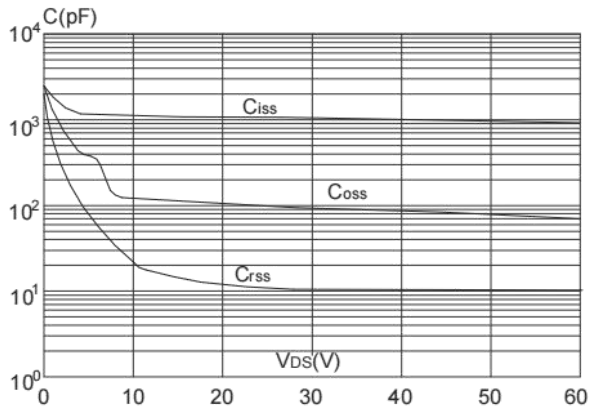




Rdson-Drain Current

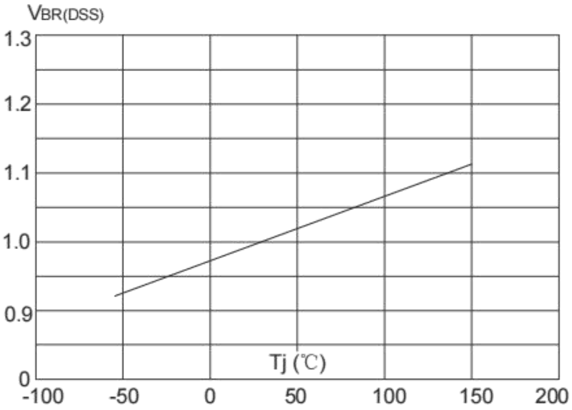
Body Diode Characteristic





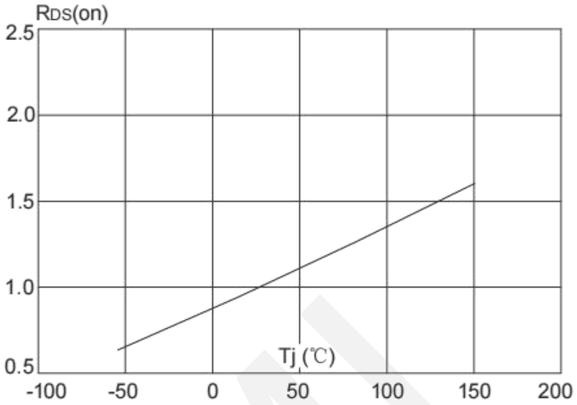
Gate Charge

Capacitance Characteristics



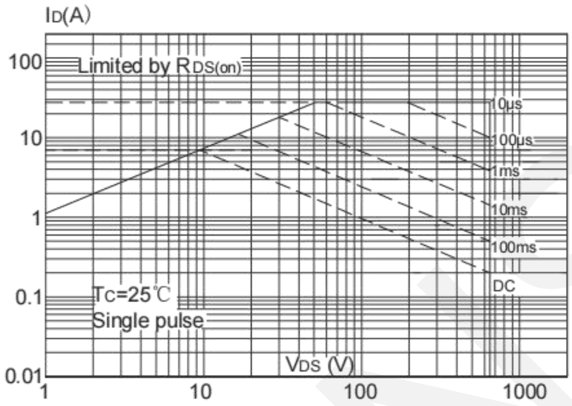
Normalized Breakdown Voltage vs.

Junction Temperature

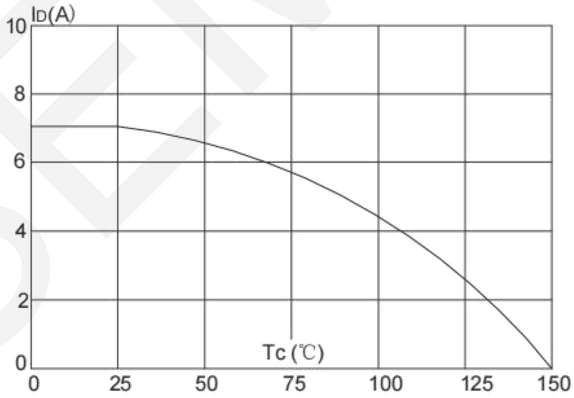


Normalized on Resistance vs.

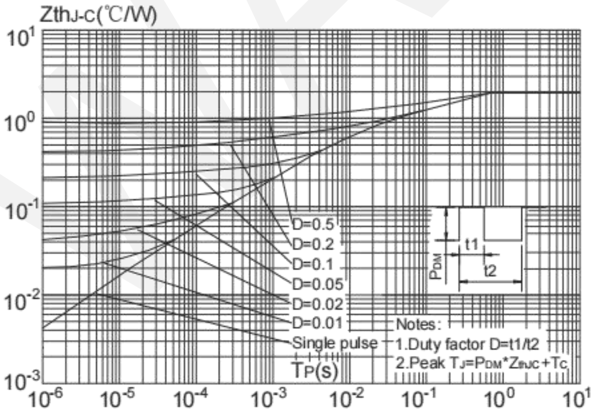
Junction Temperature



Maximum Safe Operating Area

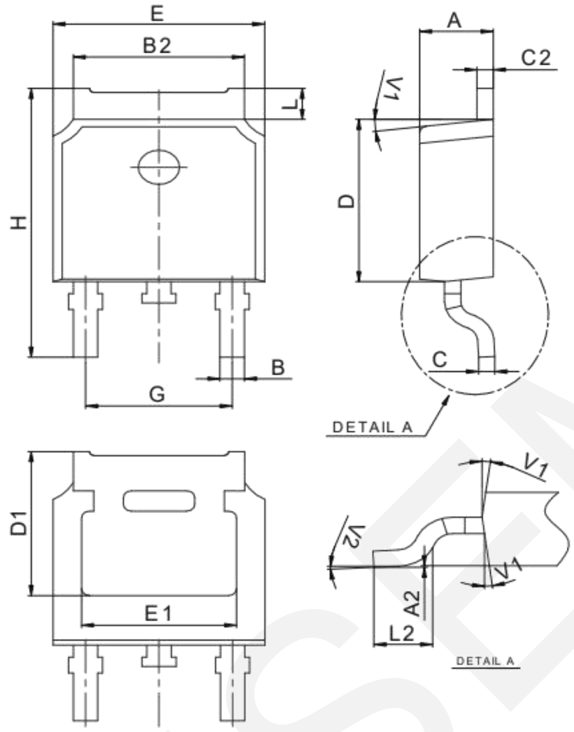


Maximum Continuous Drain Current vs. Case Temperature



Maximum Effective Transient Thermal Impedance, Junction-to-Case

7.Package Dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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