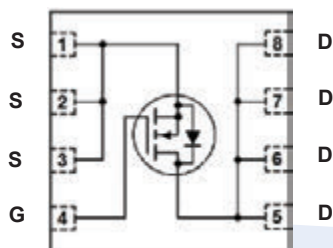


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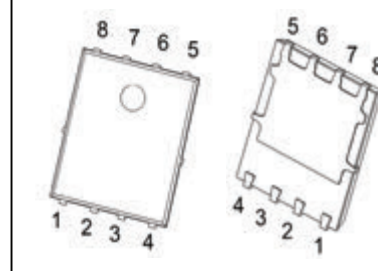
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■ Features

- $V_{DS} = 80\text{ V}$
- I_D (at $V_{GS}=10\text{V}$) = 48 A
- $R_{DS(ON)}$ (at $V_{GS} = 10\text{ V}$) < 6.5 m Ω
- $R_{DS(ON)}$ (at $V_{GS} = 4.5\text{ V}$) < 8.5 m Ω
- 100% UIS Tested
- 100% R_g Tested



PDFN5x6-8(PDFNWB5x6-8L)

■ Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	80	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current (Note 1)	I_D	$T_C = 25^\circ\text{C}$	A	
		$T_C = 100^\circ\text{C}$		42.5
Pulsed Drain Current (Note 2)	I_{DM}	170		
Continuous Drain Current	I_{DSM}	$T_A = 25^\circ\text{C}$		20
		$T_A = 70^\circ\text{C}$	16	
Avalanche Current (Note 2)	I_{AS}	40	A	
Avalanche Energy $L = 0.1\text{mH}$ (Note 2)	E_{AS}	80	mJ	
Thermal Resistance, Junction- to-Ambient (Note 3, 5)	$R_{\theta JA}$	55	$^\circ\text{C}/\text{W}$	
Thermal Resistance, Junction- to-Case	$R_{\theta JC}$	2.2		
Power Dissipation (Note 4)	P_D	$T_C = 25^\circ\text{C}$	W	
		$T_C = 100^\circ\text{C}$		22
Power Dissipation (Note 5)	P_{DSM}	$T_A = 25^\circ\text{C}$		5.0
		$T_A = 70^\circ\text{C}$		3.2
Junction Temperature	T_J	150	$^\circ\text{C}$	
Storage Temperature Range	T_{stg}	-55 to 150		

Notes:

1. The maximum current rating is package limited.
2. Single pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.
3. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.
4. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
5. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The Power dissipation P_{DSM} is based on $R_{\theta JA} t \leq 10\text{s}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.

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■ Electrical Characteristics (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Static Characteristics							
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250 μA, V _{GS} = 0V	80			V	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80 V, V _{GS} = 0 V			1	μA	
		V _{DS} = 80 V, V _{GS} = 0 V, T _J = 55°C			5		
Gate to Source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA	
Gate to Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.3		2.3	V	
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 20 A			6.5	mΩ	
		V _{GS} = 10 V, I _D = 20 A, T _J = 125°C			11		
		V _{GS} = 4.5 V, I _D = 20 A			8.5		
Forward Transconductance	g _{FS}	V _{DS} = 5 V, I _D = 20 A		77		S	
Dynamic Characteristics							
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 40 V, f = 1 MHz		2540		pF	
Output Capacitance	C _{oss}			310			
Reverse Transfer Capacitance	C _{rss}			18.5			
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	0.7		2.2	Ω	
Switching Characteristics							
Total Gate Charge (10V)	Q _g	V _{GS} = 10V, V _{DS} = 40 V, I _D = 20 A		36	52	nC	
Total Gate Charge (4.5V)				16.5	25		
Gate Source Charge			Q _{gs}		6.5		
Gate Drain Charge			Q _{gd}		6		
Turn-On Delay Time	t _{d(on)}	V _{GS} = 10V, V _{DS} = 40 V, R _L = 2 Ω, R _{GEN} = 3 Ω		7.5		ns	
Turn-On Rise Time	t _r			4			
Turn-Off Delay Time	t _{d(off)}			32			
Turn-Off Fall Time	t _f			6			
Drain-Source Diode Characteristics							
Body Diode Reverse Recovery Time	t _{rr}	I _F = 20A, di/dt = 500 A/μs		23		ns	
Body Diode Reverse Recovery Charge	Q _{rr}			91		nC	
Maximum Body-Diode Continuous Current	I _S	(Note 1)			48	A	
Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1 A			1	V	

Notes:

- The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.
- These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of T_{J(MAX)} = 150°C. The SOA curve provides a single pulse rating.
- These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

■ Marking

Marking	K5076 KC***
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■ Typical Electrical and Thermal Characteristics

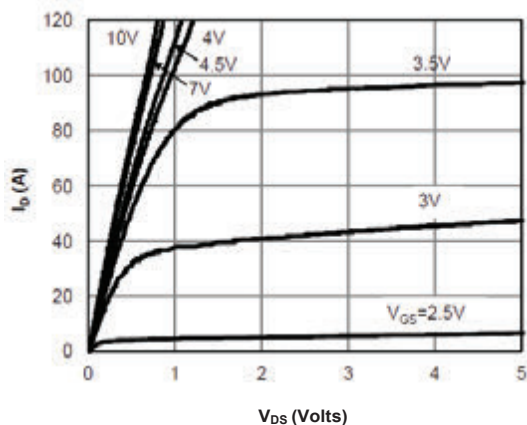


Figure 1: On-Region Characteristics (Note 6)

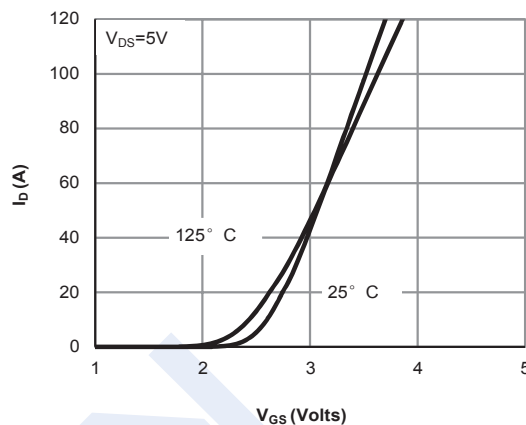


Figure 2: Transfer Characteristics (Note 6)

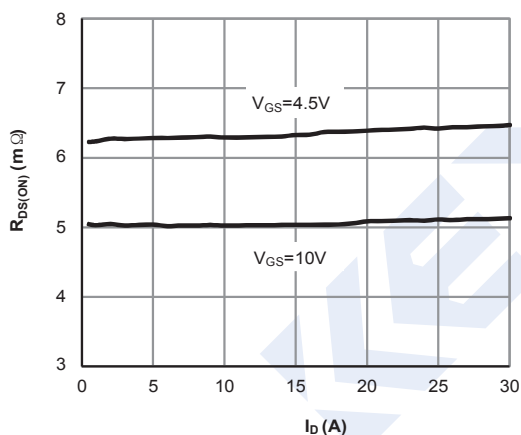


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note 6)

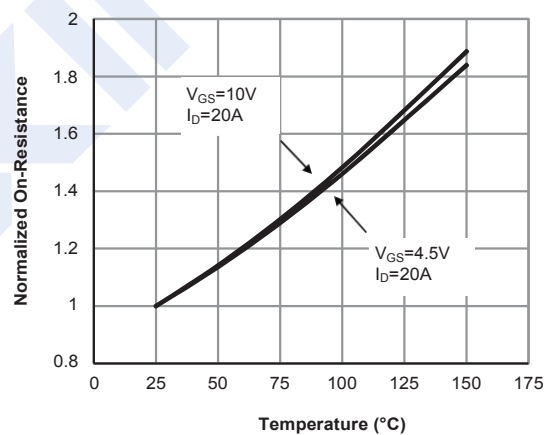


Figure 4: On-Resistance vs. Junction Temperature (Note 6)

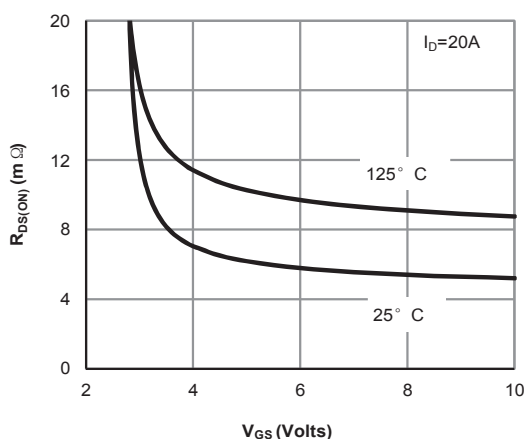


Figure 5: On-Resistance vs. Gate-Source Voltage (Note 6)

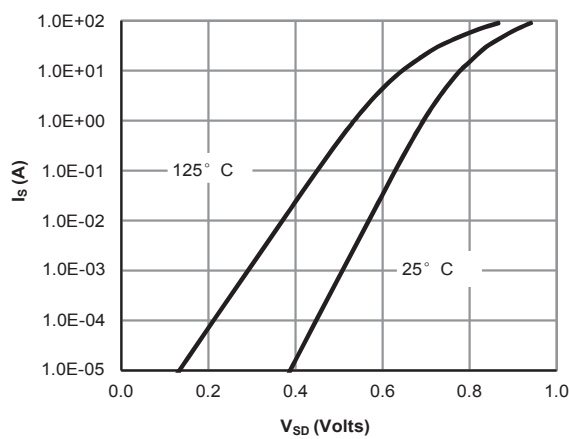


Figure 6: Body-Diode Characteristics (Note 6)

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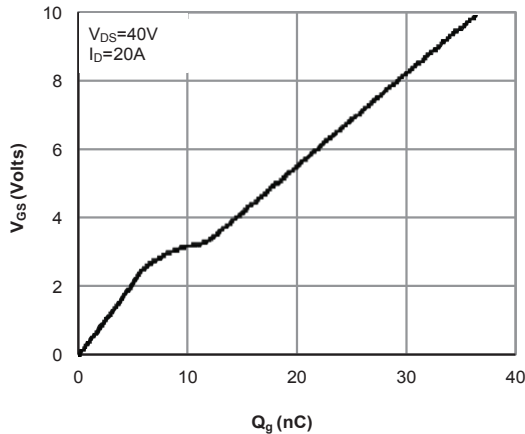


Figure 7: Gate-Charge Characteristics

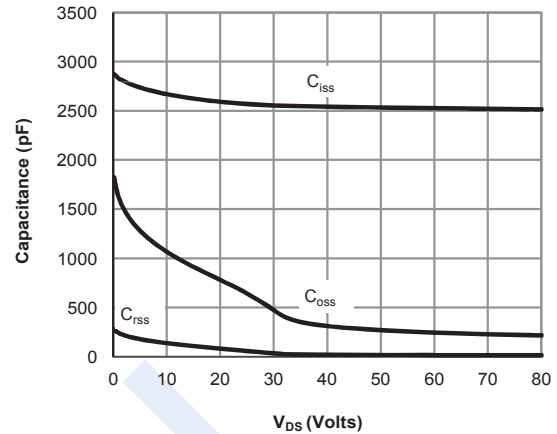


Figure 8: Capacitance Characteristics

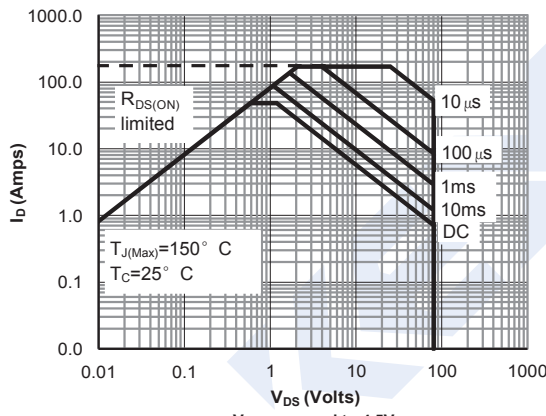


Figure 9: Maximum Forward Biased Safe Operating Area (Note 7)

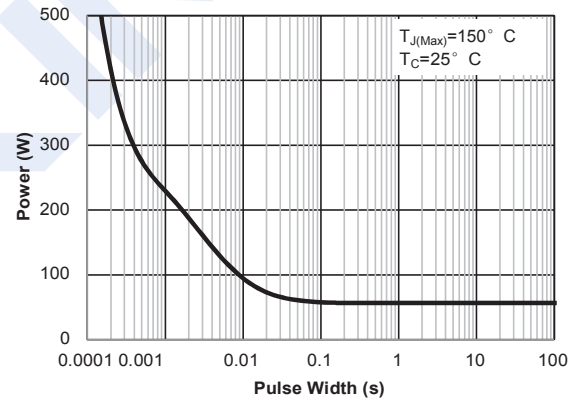


Figure 10: Single Pulse Power Rating Junction-to-Case (Note 7)

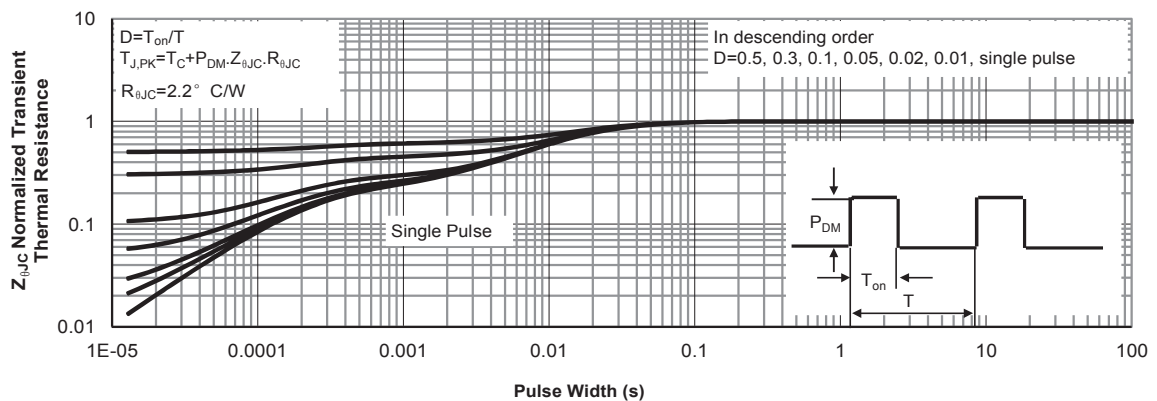


Figure 11: Normalized Maximum Transient Thermal Impedance (Note 7)

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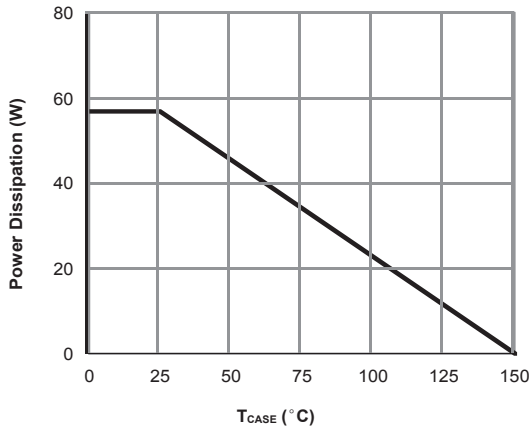


Figure 12: Power De-rating (Note 7)

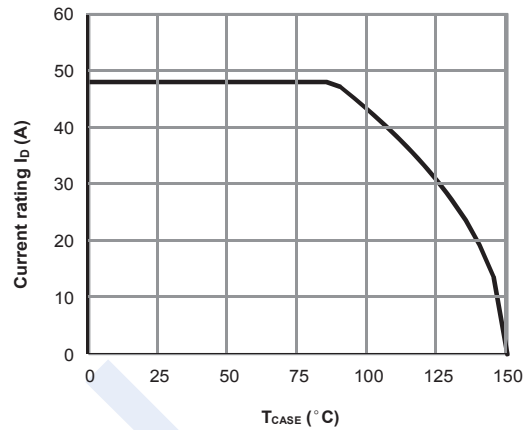


Figure 13: Current De-rating (Note 7)

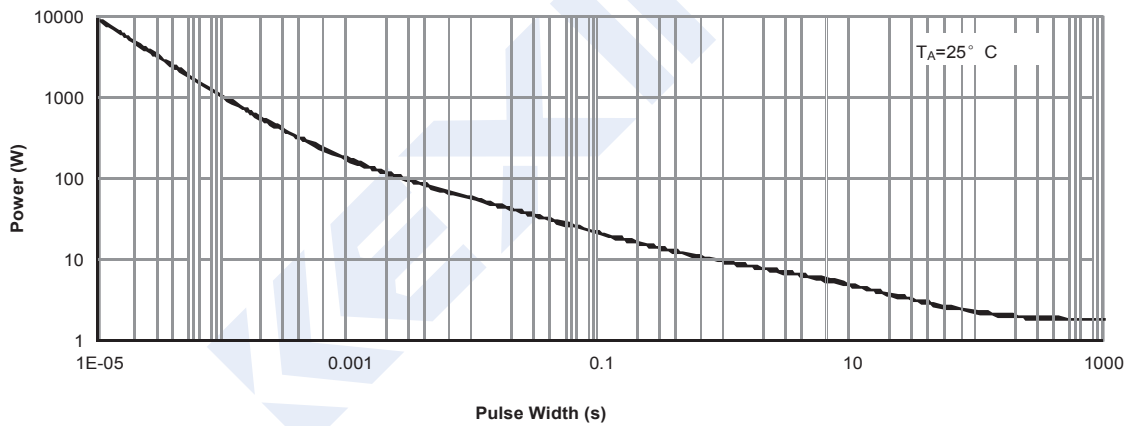


Figure 14: Single Pulse Power Rating Junction-to-Ambient (Note 8)

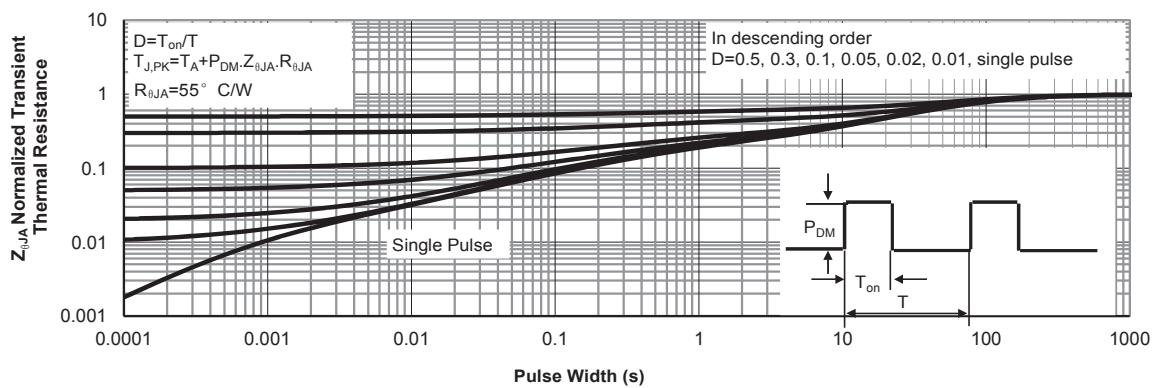
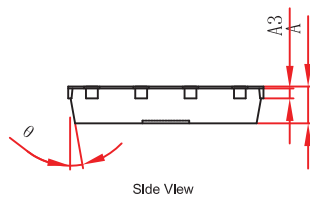
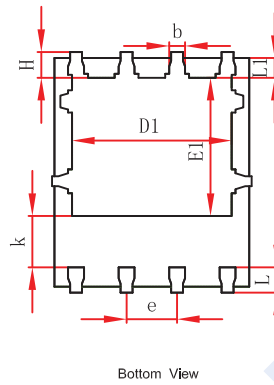
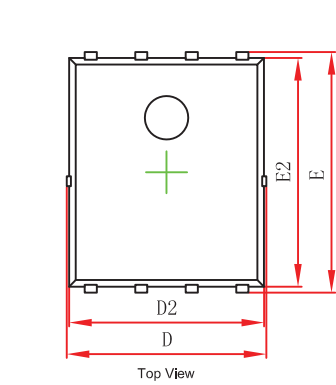


Figure 15: Normalized Maximum Transient Thermal Impedance (Note 8)

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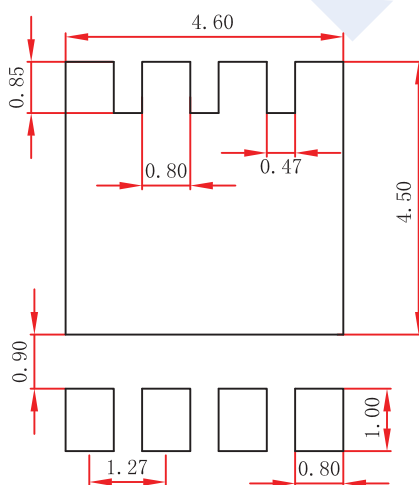
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■ PDFN5x6-8(PDFNWB5x6-8L) Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

■ PDFN5x6-8(PDFNWB5x6-8L) Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.