

/ Descriptions

PDFN5×6 N

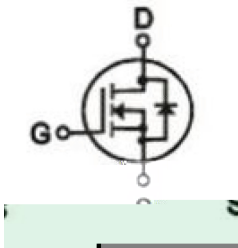
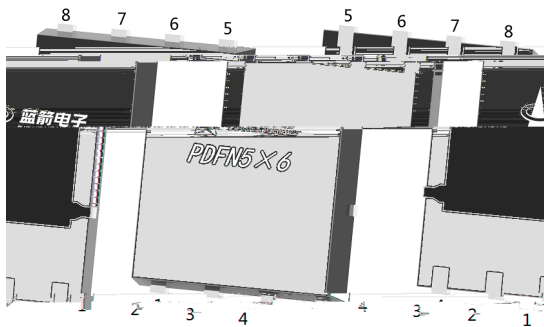
N-Channel MOSFET in a PDFN5×6 Plastic Package.

/ Features

Low $R_{DS(ON)}$ to minimize conductive loss; low Gate Charge for fast switching; Low Thermal resistance;
HF Product.

/ Applications

Battery Management.

/ Equivalent Circuit**/ Pinning**

PIN1、2、3: S PIN4: G PIN5、6、7、8: D

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings($T_a=25^\circ\text{C}$ -)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Drain Current - Continuous	I_D	215	A
Drain Current – Pulsed	I_{DM}	430	A
Gate-Source Voltage	V_{GS}	± 20	V
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	70	W
Single Pulse Avalanche Energy($L=0.5\text{mH}$)	E_{AS}	542	mJ
Avalanche Current($L=0.5\text{mH}$)	I_{AS}	44	A
Junction and Storage Temperature Range	T_j, T_{stg}	-55 to 150	
Thermal resistance, junction - case	$R_{\theta JC}$	1.79	/ W
Thermal resistance, junction - ambient	$R_{\theta JA}$	50	/ W

/ Electrical Characteristics($T_a=25^\circ\text{C}$ -)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	40	46		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40\text{V}, V_{GS}=0\text{V}$			1.0	μA
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=20\text{A}$		0.93	1.0	m Ω
		$V_{GS}=4.5\text{V}, I_D=10\text{A}$		1.28	2.0	
Input Capacitance	C_{iss}	$V_{DS}=25\text{V}, V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		5800		pF
Output Capacitance	C_{oss}			1860		
Reverse Transfer Capacitance	C_{rss}			135		
Gate resistance	R_g	$V_{GS}=0\text{V}, V_{DS}=0\text{V}$ $f=1\text{MHz}$		1.0		Ω
Total Gate Charge	$Q_g(10\text{V})$	$V_{GS}=10\text{V}, V_{DS}=20\text{V},$ $I_D=20\text{A}$		70		nC
Total Gate Charge	$Q_g(4.5\text{V})$			30		
Gate Source Charge	Q_{gs}			14.5		
Gate Drain Charge	Q_{gd}			10.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10\text{V}, V_{DS}=20\text{V},$ $R_L=1, R_{GEN}=3$		15		ns
Turn-On Rise Time	t_r			5.8		
Turn-Off Delay Time	$t_{d(off)}$			62		
Turn-Off Fall Time	t_f			10		

/ Electrical Characteristic Curve

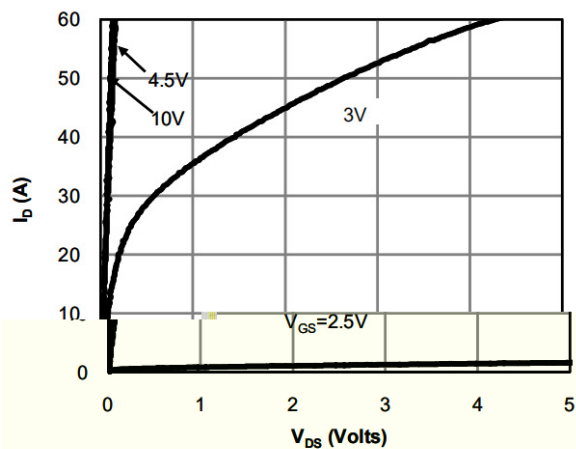


Figure 1: On-Resistance Characteristics

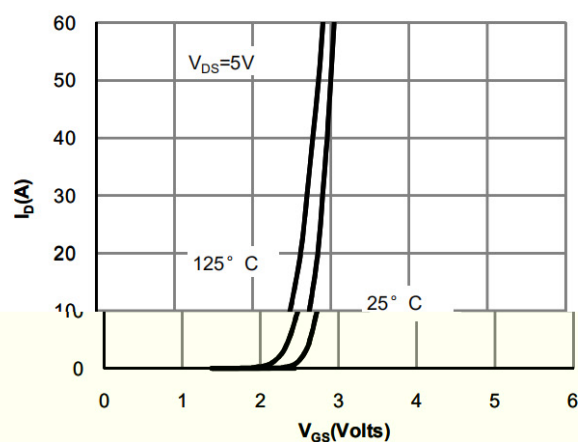


Figure 2: Transfer Characteristics

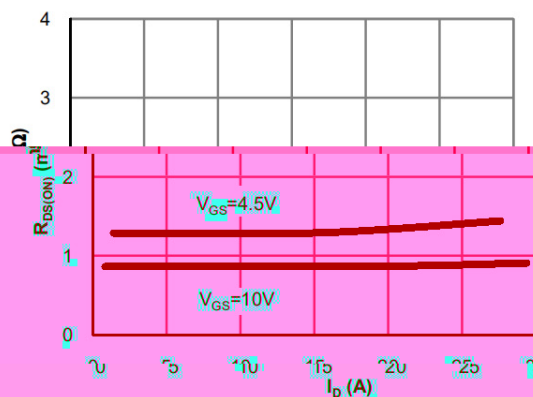


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

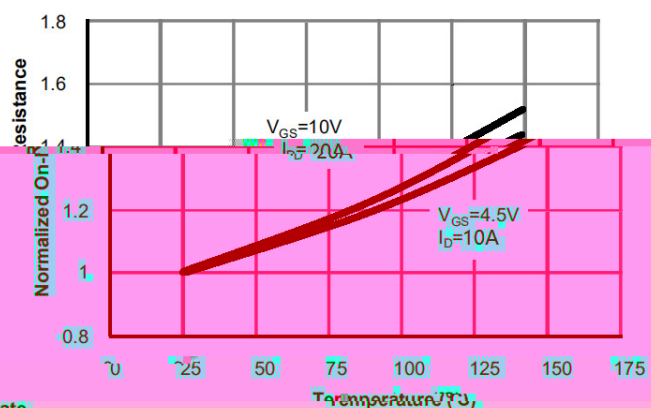


Figure 4: On-Resistance vs. Junction Temperature

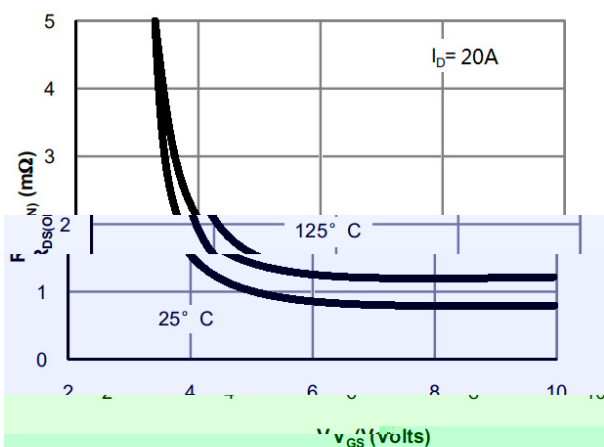


Figure 5: On-Resistance vs. V_GS

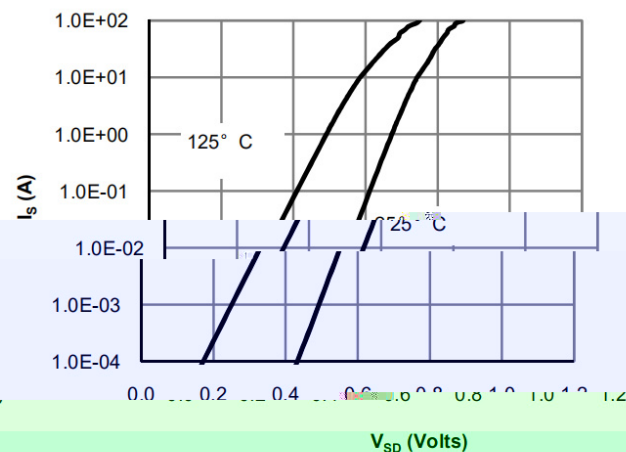


Figure 6: Body Diode Characteristic



Electrical Characteristic Curve

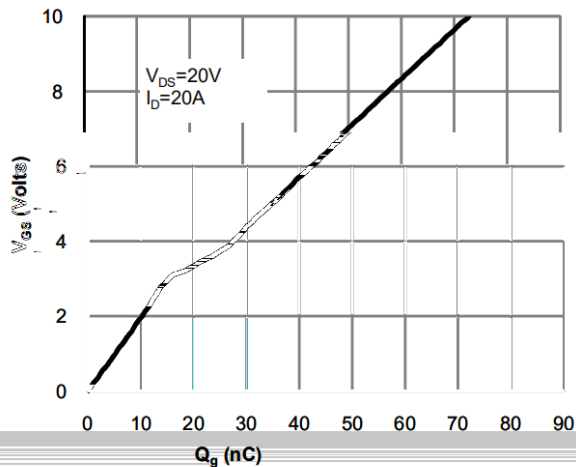


Figure 7: Gate-Charge Characteristics

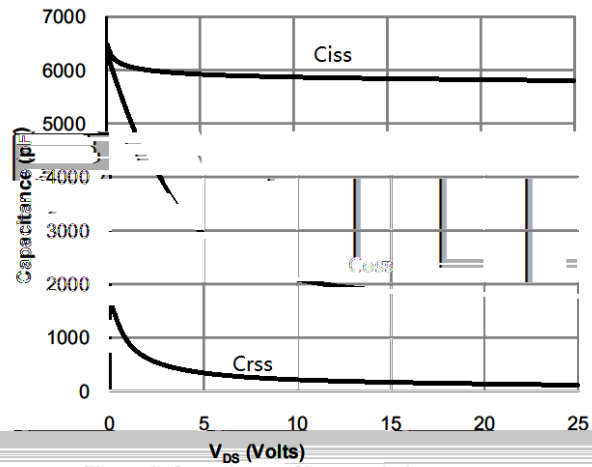


Figure 8: Capacitance Characteristics

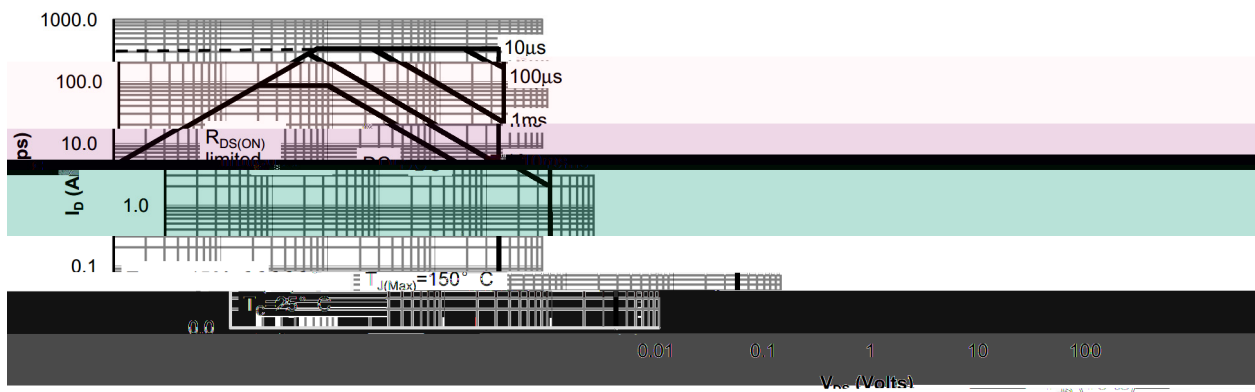


Figure 9: Maximum Forward Biased Safe Operating Area

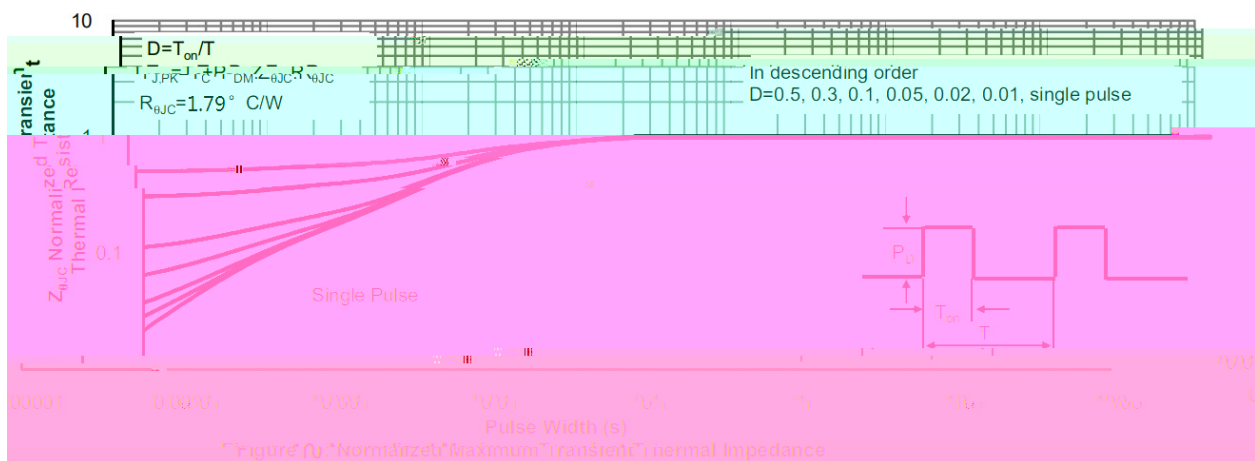
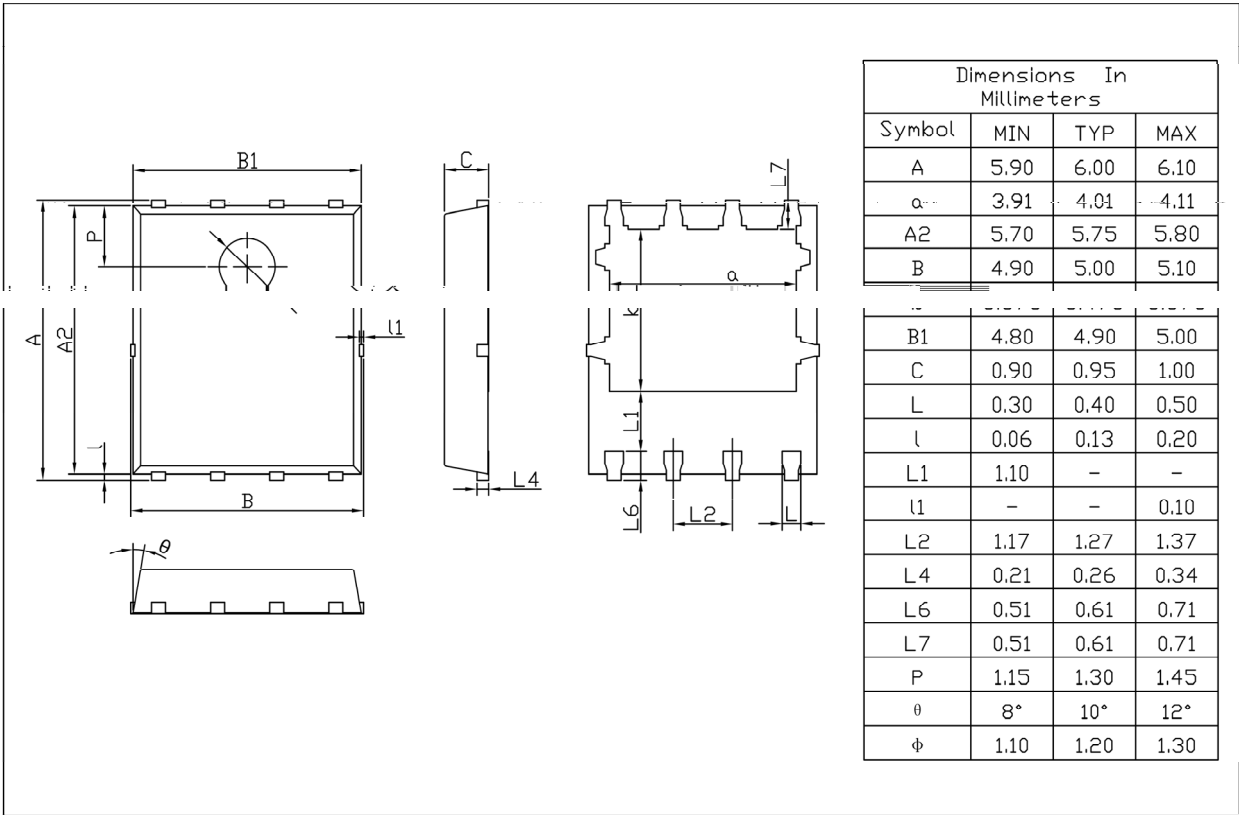


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions

PDFN5×6

Unit:mm



Rev.01 202209

BRCS010N04SZC

Rev.B May.-2023

() / Temperature Profile for IR Reflow Soldering(Pb-Free)

Note:

- | | | | | | |
|---|-------|-----|-----------|--------|---|
| 1 | 150 | 180 | 60 | 90sec; | 1.Preheating:150~180 , Time:60~90sec. |
| 2 | 245±5 | | 5±0.5sec; | | 2.Peak Temp.:245±5 , Duration:5±0.5sec. |
| 3 | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

260±5	10±1 sec.	Temp.:260±5	Time:10±1 sec
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/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension			(unit mm ³)
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box	
PDFN5 6	5000	2	10000	6	60000	13" 12	360 360 50	380 335 366	