BRCS020N06SZC

Rev.B Dec.-2024

/ Descriptions

PDFN5Ö6 Ṃ Ŀ N ὃ ʆ ῷ Ẕ ᥰ

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

/ Features

V_{DS}(V)=60 V I_D=158A

$R_{DS(ON)}$@10V≤2.0mΩ(Typ.1.8mR)

$R_{DS(ON)}$@4.5V≤3.0mΩ(Typ.2.5mR)

ῃ ғ ᵝ HF Product.

/ Applications

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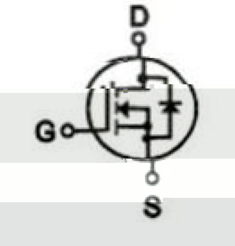
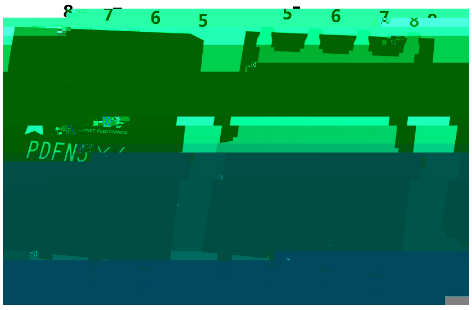
Secondary Side Synchronous Rectification,DC-DC Converter,Motor Control,Load Switching.

/ Equivalent Circuit



/ Pinning



PIN1 2 3 S PIN4 G PIN5 6 7 8 D

/ Marking

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See Marking Instructions.

/ Absolute Maximum Ratings(T_a=25)

v ˝Ω Parameter		ꞁ ᴺ Symbol	˝ΩӦ Rating	D ẖ Unit
Drain-Source Voltage		V_{DS}	60	V
Continuous Drain Current		I_D(Tc=25)	158	A
Pulsed Drain Current		I_{DM}	316	A
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation		P_D(T_c=25)	90	W
Avalanche energy(L=0.5mH)		E_{AS}	380	mJ
Avalanche Current(L=0.5mH)		I_{AS}	30.8	A
Junction and Storage Temperature Range		$T_{j,}$ T_{stg}	-55 to 150	ɫ
Maximum Junction-to-Ambient	t ≤ 10s	$R_{\theta JA}$	20	/ W
	Steady-State		57	
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	1.39	

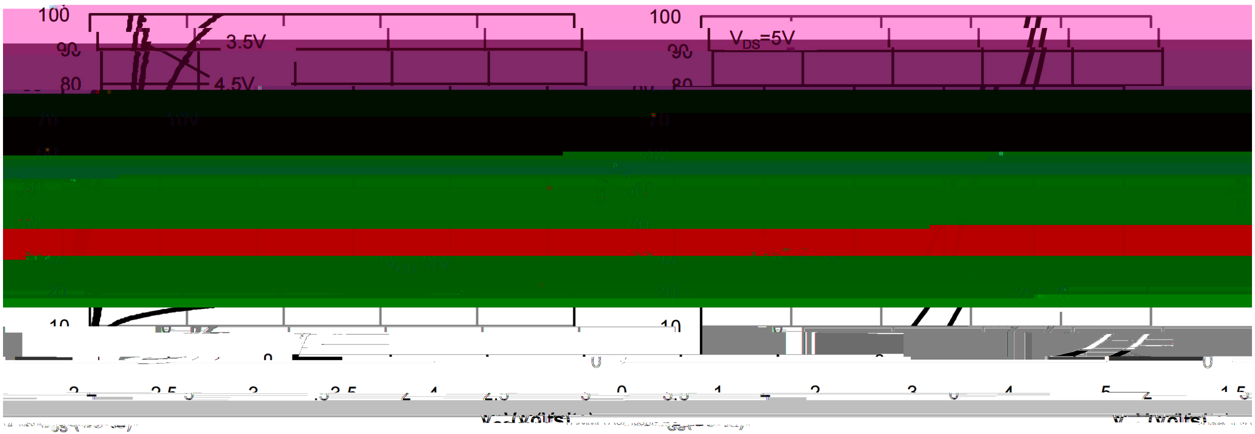
/ Electrical Characteristics(Ta=25)

v ˝Ω Parameter	ꞁ ᴺ Symbol	╜ ꞉ϯ Ţ Test Conditions	ɷ ŋ Ӫ Min	Ɛ ʒ Ӫ Typ	ɷ ᶻ Ӫ Max	D ẖ Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	60	65		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V V_{GS}=0V			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	1	1.6	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V I_D=20A		1.8	2.5	mΩ
		V_{GS}=4.5V I_D=10A		2.4	3.5	
Forward On Voltage	V_{SD}	V_{GS}=0V I_S=1A			1.2	V
Gate resistance	R_g	f=1MHz		1.0		Ω
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1.0MHz		6700		pF
Output Capacitance	C_{oss}			1400		
Reverse Transfer Capacitance	C_{rss}			70		
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=10V, V_{DS}=30V, I_D=20A		60		nC
Total Gate Charge	$Q_{g(4.5V)}$			23		
Gate Source Charge	Q_{gs}			16		
Gate Drain Charge	Q_{gd}			3		

/ Electrical Characteristics(Ta=25)

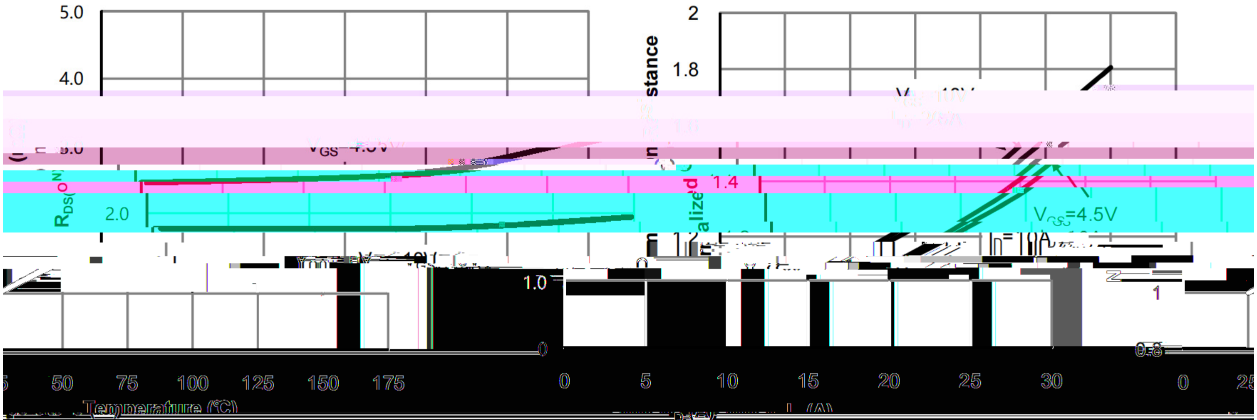
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V V_{DS}=20V R_L=1Ω R_{GEN}=3Ω		13		ns
Turn-On Rise Time	t_r			4		
Turn-Off Delay Time	$t_{d(off)}$			47		
Turn-Off Fall Time	t_f			6.5		

/ Electrical Characteristic Curve



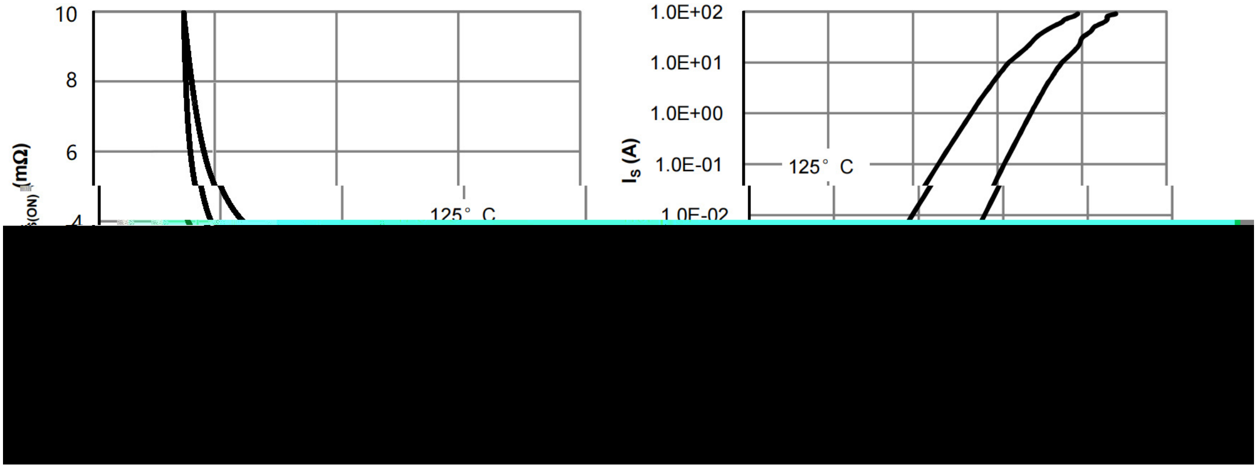
On-Region Characteristics

Figure 2: Transfer Characteristics

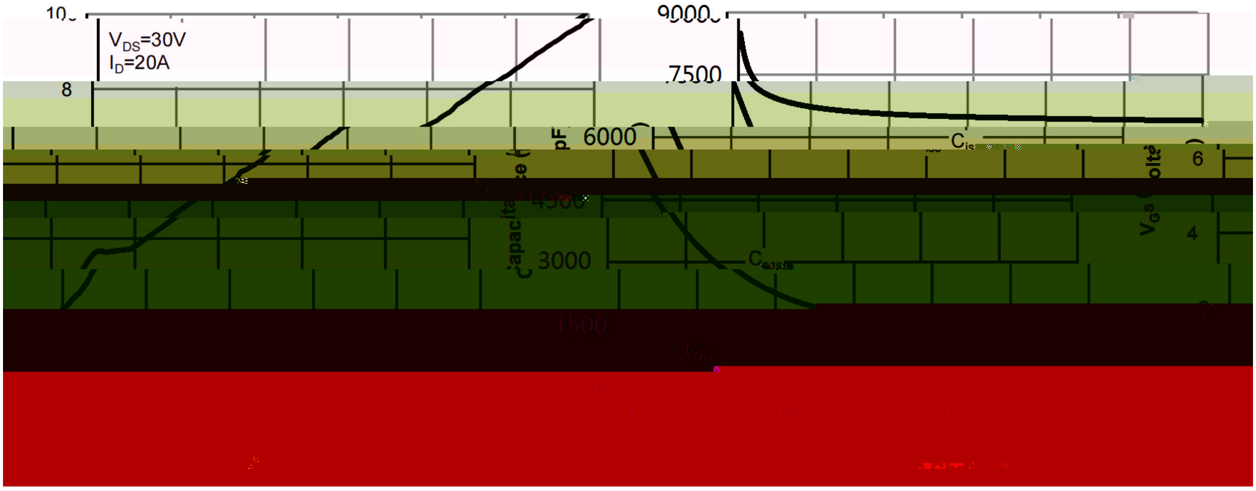


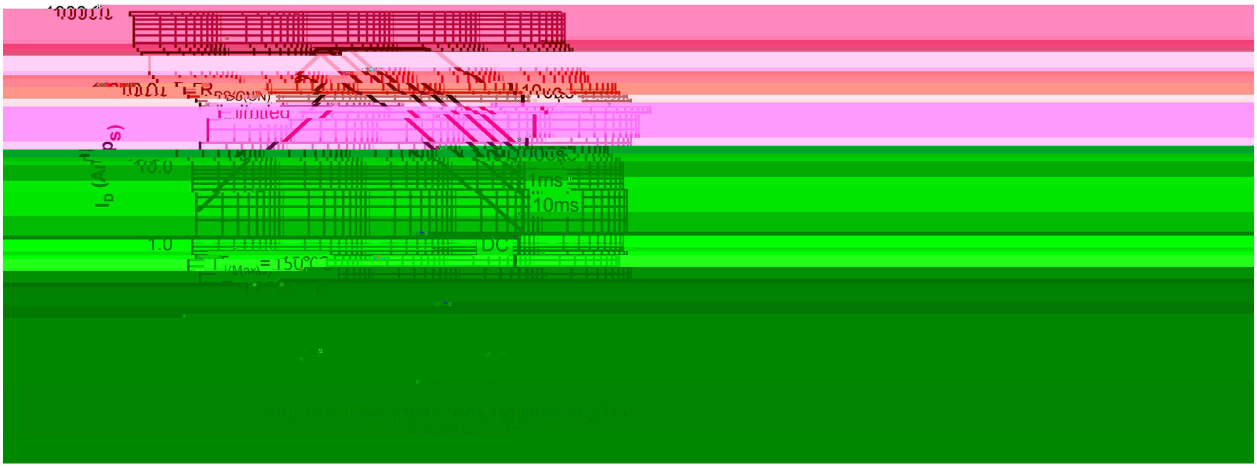
Temperature

Voltage



/ Electrical Characteristic Curve





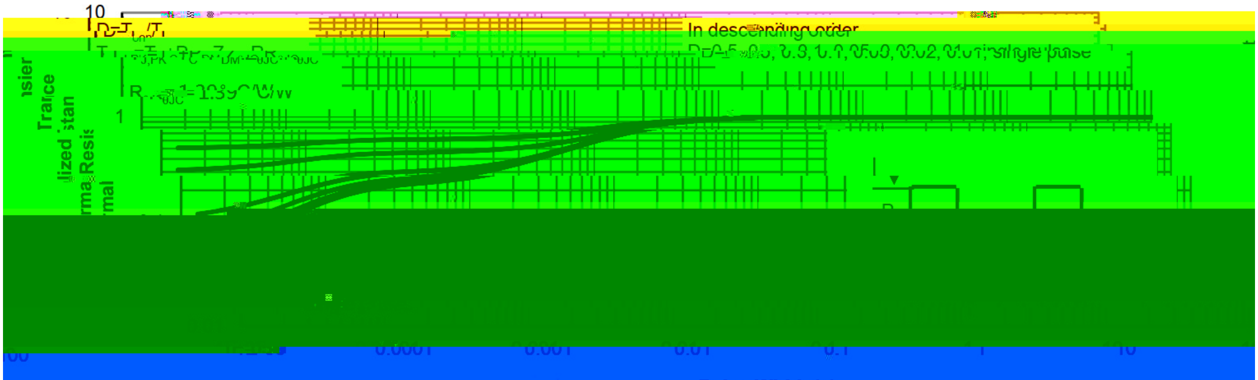
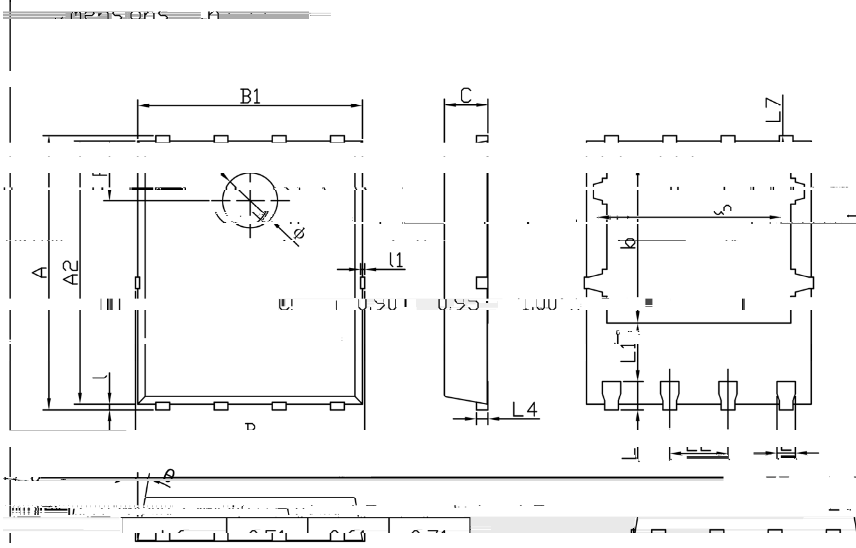


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions

PDFN5×6 Unit:mm



Dimensions In Millimeters			
Symbol	MIN	TYP	MAX
A	5.90	6.00	6.10
a	3.91	4.01	4.11
A2	[illegible]	[illegible]	[illegible]
B	4.90	5.00	5.10
b	3.375	3.475	3.575
B1	4.80	4.90	5.00
e	[illegible]	[illegible]	[illegible]
L	0.30	0.40	0.50
l	0.06	0.13	0.20
L1	1.10	–	–
L3	[illegible]	[illegible]	[illegible]
L2	1.17	1.27	1.37
L4	0.21	0.26	0.34
L6	0.51	0.61	0.71
L7	0.51	0.61	0.71
P	1.15	1.30	1.45
θ	8°	10°	12°
ϕ	1.10	1.20	1.30

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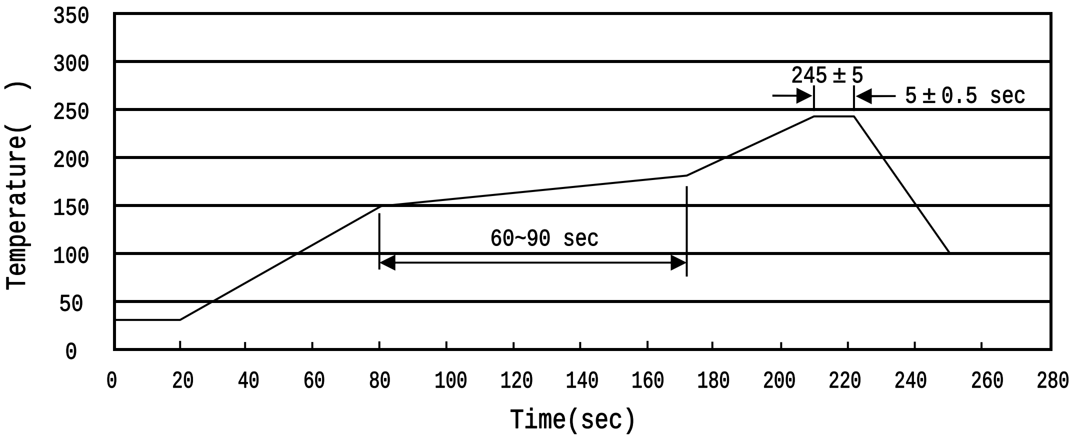
/ Marking Instructions

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



ب ˝ χ	Note:
1　ḯ ♬ □ ẙ 150 Ḱ 180 ɫ ı ̀H ڗ 60 Ḱ 90sec;	1.Preheating:150~180 ɫ , Time:60~90sec.
2　Ś Ӫ □ ẙ 245 ° 5 ɫ ı ̀H ڗ ̔Y ᄸ ꟃ 5 ° 0.5sec;	2.Peak Temp.:245 ° 5 ɫ , Duration:5 ° 0.5sec.
3　ì ˙ ɣ ˛ ɔ ه ẙ ꟃ 2 Ḱ 10 ɫ /sec.	3. Cooling Speed: 2~10 ɫ /sec.

/ Resistance to Soldering Heat Test Conditions

□ ẙ χ 260 ° 5 ɫ	̀H ڗ χ 10 ° 1 sec.	Temp.:260±5	Time:10±1 sec

/ Packaging SPEC.

ꭥ ̀ ɣ ƫ / REEL

Package Type Ṃ ƫ ẻ Ẫ	Units					Dimension (unit mm^3)		
	Units/Reel ᴱ 2 ꭥ ̀	Reels/Inner Box ꭥ ̀ 2 ¨	Units/Inner Box ᴱ 2 ¨	Inner Boxes/Outer Box ¨ 2 ᄸ	Units/Outer Box ᴱ 2 ᄸ	Reel	Inner Box ¨	Outer Box ᄸ
PDFN5×6	5,000	2	10,000	6	60,000	13”×12	360×360×50	380×335×366

/ Notices