

/ Descriptions

PDFN5×6 N

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

/ Features

 $V_{DS}(V)=500V$ $I_D=3A$ $R_{DS(ON)}@10V<1.6\Omega$ (Typ. 1.5Ω) $R_{DS(ON)}@6V<2.0\Omega$ (Typ. 1.6Ω)

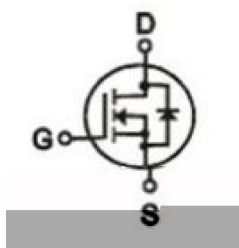
HF Product.

/ Applications

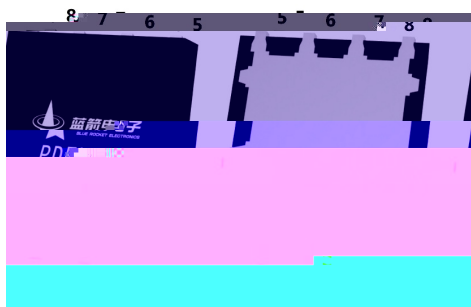
LED

Used in high-frequency switching power supply, electronic ballast, LED power supply and high-speed air duct.

/ Equivalent Circuit



/ Pinning



PIN1 2 3 S PIN4 G PIN5 6 7 8 D

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	500	V
Drain Current	$I_D(T_c=25^\circ\text{C})$	3	A
Drain Current - Pulsed	I_{DM}	9.2	A
Gate-Source Voltage	V_{GS}	± 30	V
Avalanche Current	I_{AR}	7	A
Single Pulsed Avalanche Energy	E_{AS}	218	mJ
Power Dissipation ($T_c=25^\circ\text{C}$)	P_D	33	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Thermal resistance,Junction to Case	$R_{\theta JC}$	3.79	/ W

/ Electrical Characteristics(Ta=25)

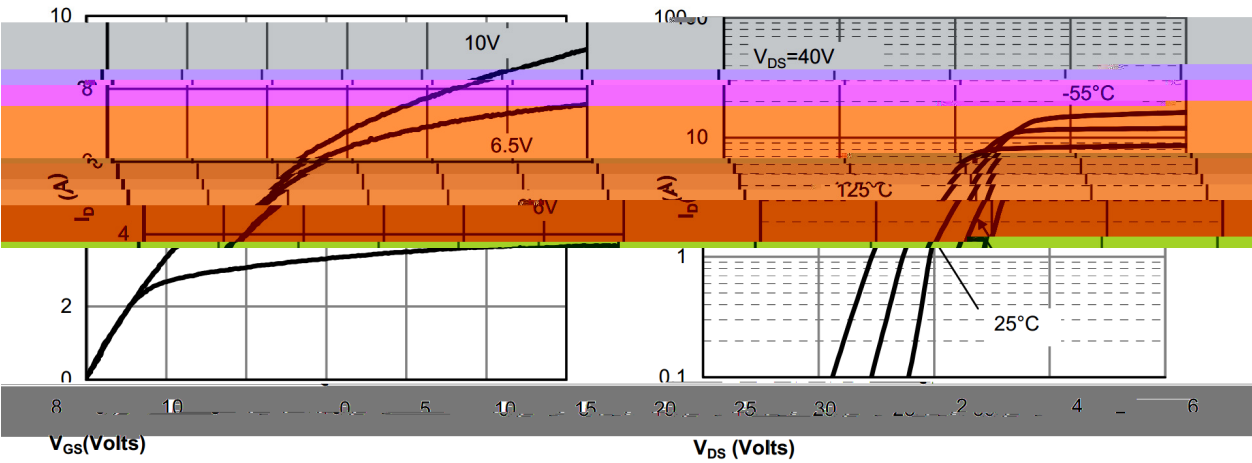
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	500	560		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=500V$ $V_{GS}=0V$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2	3.2	4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=2.5A$		1.5	1.6	Ω
	$R_{DS(on)}$	$V_{GS}=6V$ $I_D=1A$		1.6	2.0	Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		570		pF
Output Capacitance	C_{oss}			150		pF
Reverse Transfer Capacitance	C_{rss}			10		pF
Total Gate Charge	Q_G	$V_{DS}= 400V,$ $I_D= 5.0A,$ $V_{GS}= 10V$		25		nC
Gate-Source Charge	Q_{GS}			6		
Gate-Drain Charge	Q_{GD}			8		

BRCS5N50ZC

Rev.A Jul.-2024

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=250V$ $I_D=5.0A$ $R_G=25\Omega$		32		ns
Turn-On Rise Time	t_r			55		
Turn-Off Delay Time	$t_{d(off)}$			150		

/ Electrical Characteristic Curve



2: Transfer Characteristics Figure 1: On-Region Characteristics Figure

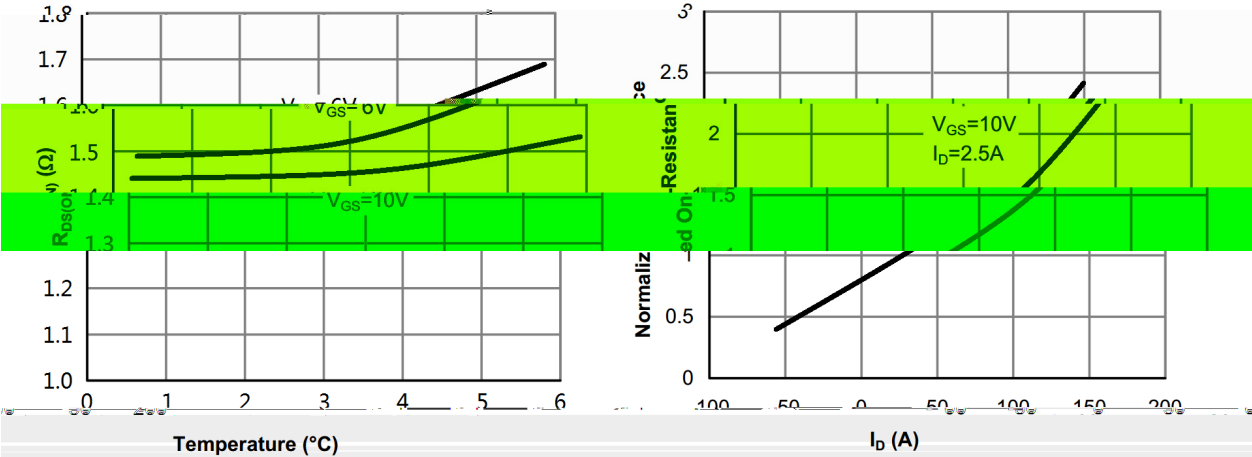


Figure 2: On-Resistance vs. Junction Temperature Figure 3: On-Resistance vs. Drain Current and Gate Voltage

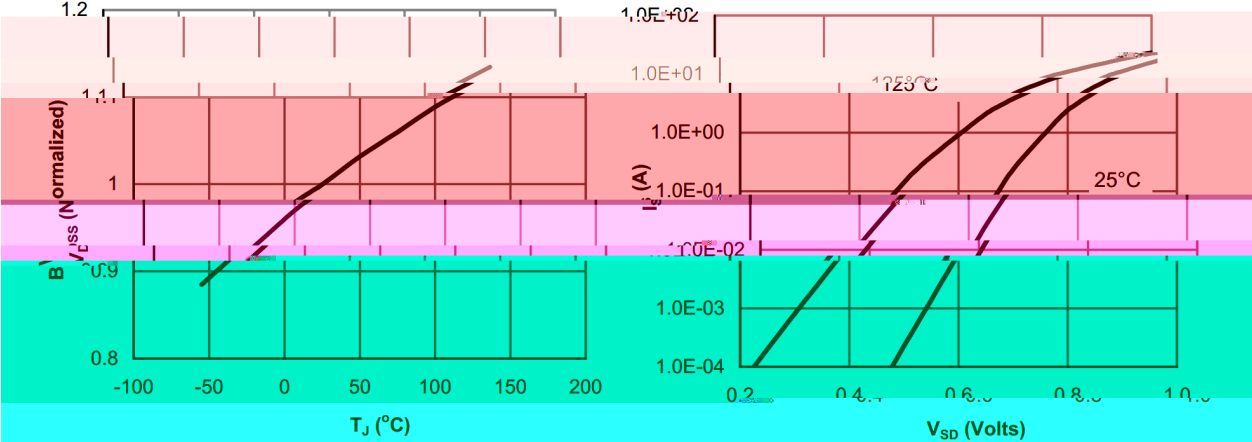


Figure 4: Breakdown vs. Junction Temperature Figure 5: Breakdown Characteristics

/ Electrical Characteristic Curve

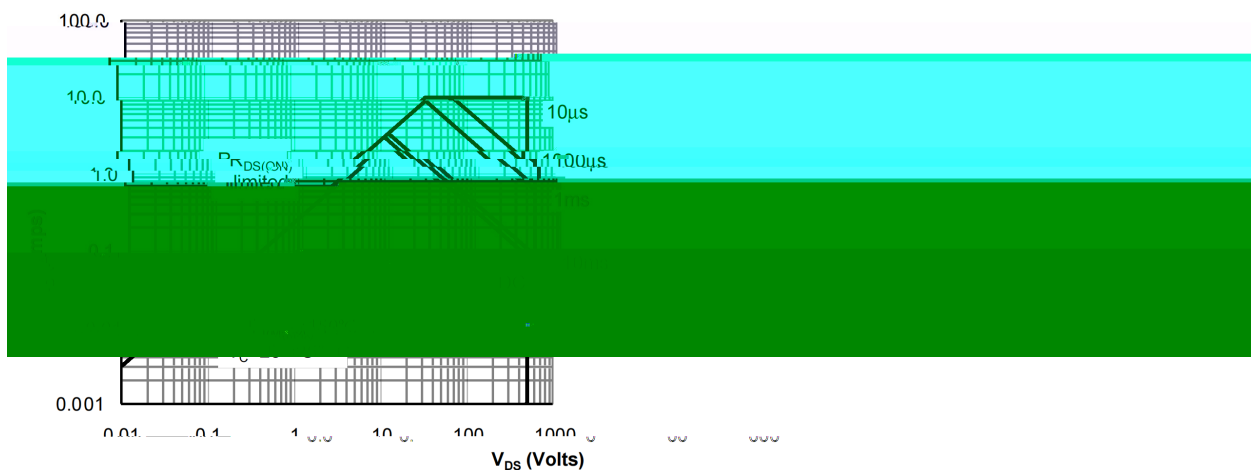
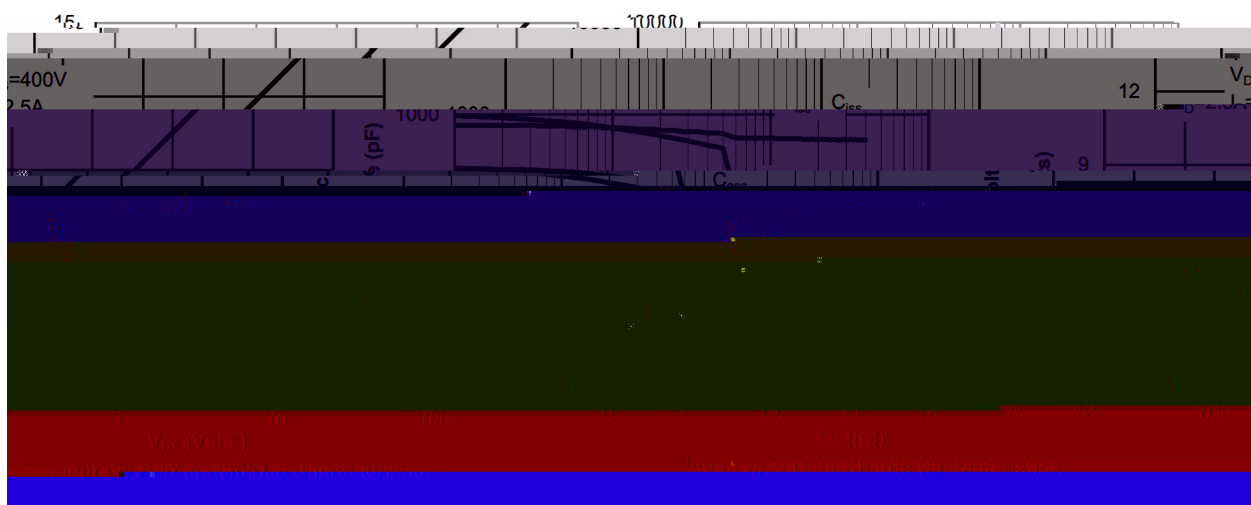


Figure 9: Maximum Forward Biased Safe

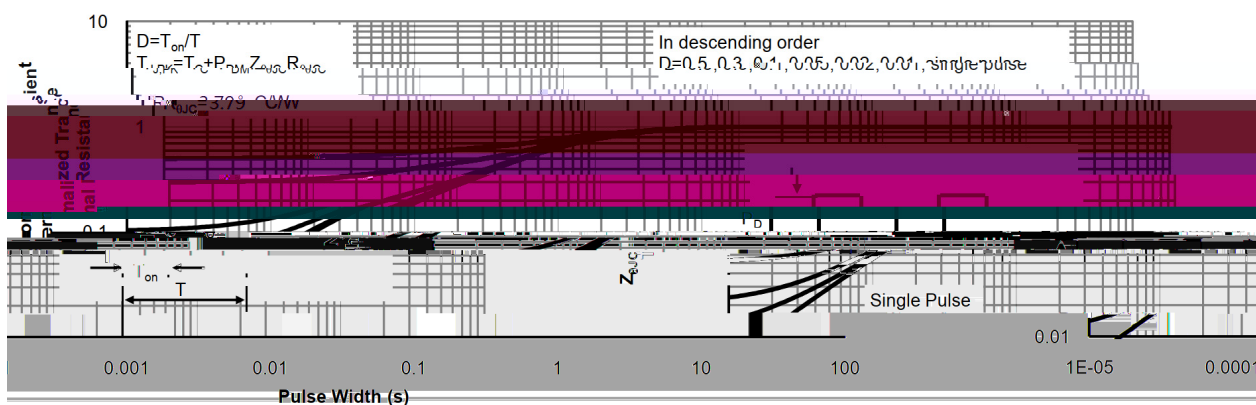
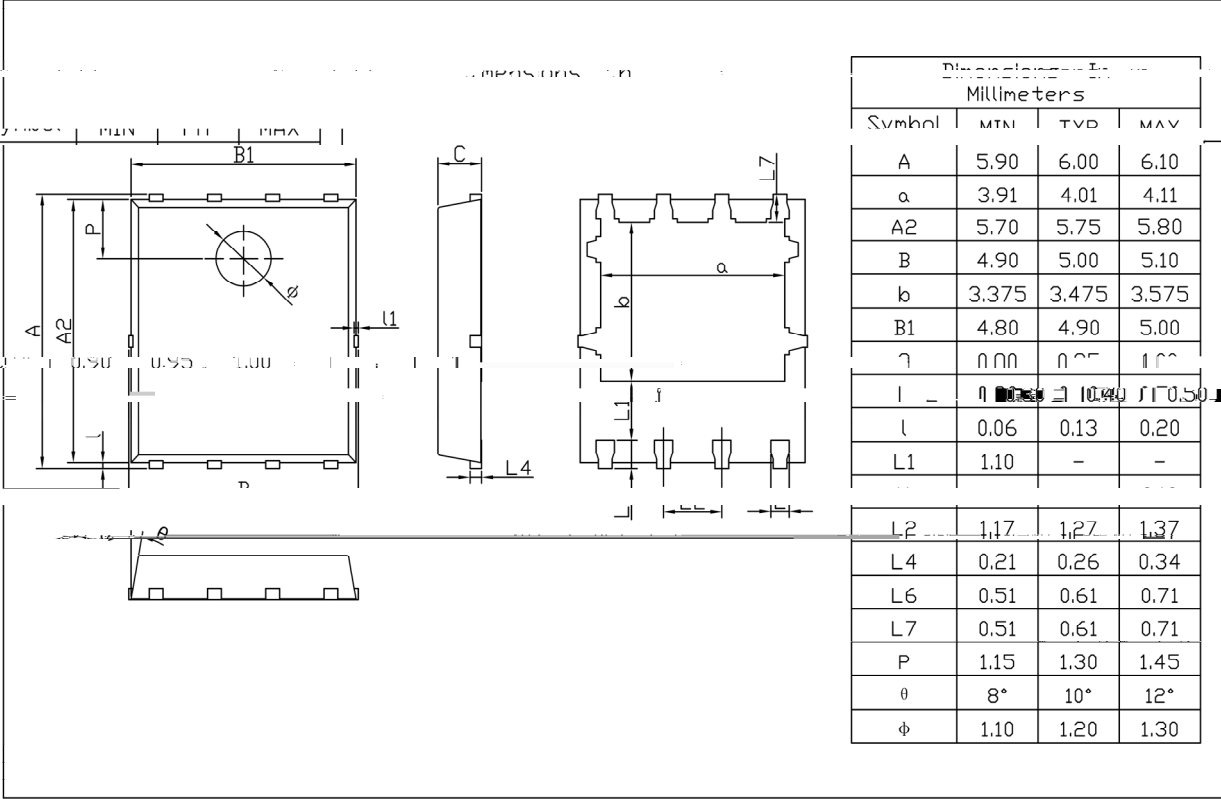


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions

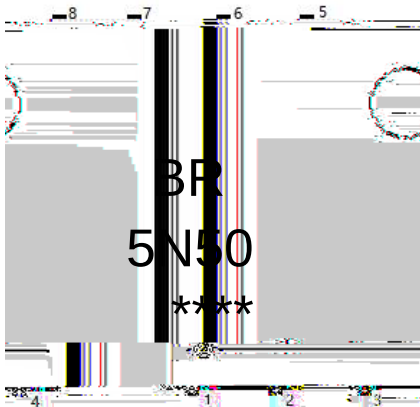
PDFN5 X6

Unit:mm



Rev.01 202209

/ Marking Instructions



BR
5N50

Note	
BR	Company Code
5N50	Product Type Code
****	Lot No. Code, code change with Lot No

