

描述 / Descriptions

PDFN5×6 封装 N 沟道场效应管。

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

特征 / Features

$V_{DS}(V)=60\text{ V}$ $I_D=60\text{ A}$

$R_{DS(ON)}@10\text{ V}\leq 6\text{ m}\Omega$ (Typ. 5.6mΩ)

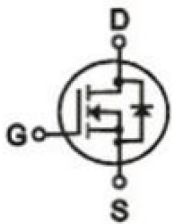
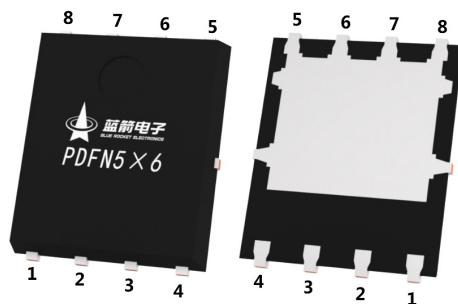
$R_{DS(ON)}@4.5\text{ V}\leq 9\text{ m}\Omega$ (Typ.7.8mΩ)

无卤产品。HF Product.

用途 / Applications

电池管理，MB/NB/UMPC/VGA 高频负载点同步 Buck 变换器，联网直流-直流电力系统，负荷开关。

Battery Management, High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA, Networking DC-DC Power System, Load Switch.

内部等效电路 / Equivalent Circuit**引脚排列 / Pinning**

PIN1、2、3: S PIN4: G PIN5、6、7、8: D

印章代码 / Marking

见印章说明。

See Marking Instructions.

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

参数 Parameter		符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage		V _{DSS}	40	V
Drain Current		I _D (T _C =25℃)	60	A
Drain Current - Pulsed		I _{DM}	120	A
Gate-Source Voltage		V _{GS}	±20	V
Single Pulsed Avalanche Energy		E _{AS}	78.5	mJ
Avalanche Current		I _{AS}	15	A
Power Dissipation		P _D (T _C =25℃)	37	W
Operating and Storage Temperature Range		T _J , T _{stg}	-55 to 150	℃
Thermal resistance, junction - ambient	t ≤ 10s	R _{θJA}	25	℃/ W
	Steady-State		55	
Thermal resistance, junction - case	Steady-State	R _{θJC}	3.4	

电性能参数 / Electrical Characteristics($T_a=25^{\circ}\text{C}$)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}$ $I_{\text{D}}=250\mu\text{A}$	40	46		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}}=40\text{V}$ $V_{\text{GS}}=0\text{V}$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}$ $V_{\text{DS}}=0\text{V}$			± 0.1	μA
Gate Threshold Voltage	$V_{\text{GS(th)}}$	$V_{\text{DS}}=V_{\text{GS}}$ $I_{\text{D}}=250\mu\text{A}$	1.0	1.6	2.5	V
Static Drain-Source On-Resistance	$R_{\text{DS(on)}}$	$V_{\text{GS}}=10\text{V}$ $I_{\text{D}}=20\text{A}$		5.6	6	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}$ $I_{\text{D}}=10\text{A}$		7.8	9	$\text{m}\Omega$
Drain-Source Diode Forward Voltage	V_{SD}	$V_{\text{GS}}=0\text{V}$ $I_{\text{S}}=1\text{A}$			1.2	V
Input Capacitance	C_{iss}	$V_{\text{DS}}=25\text{V}$ $V_{\text{GS}}=0\text{V}$ $f=1.0\text{MHz}$		990		pF
Output Capacitance	C_{oss}			390		
Reverse Transfer Capacitance	C_{rss}			42		
Gate resistance	R_{g}	$V_{\text{GS}}=0\text{V}$ $V_{\text{DS}}=0\text{V}$ $f=1\text{MHz}$		5.2		Ω
Total Gate Charge	$Q_{\text{g(10V)}}$	$V_{\text{GS}}=10\text{V}$ $V_{\text{DS}}=20\text{V}$ $I_{\text{D}}=20\text{A}$		20		nC
Total Gate Charge	$Q_{\text{g(4.5V)}}$			8.4		
Gate Source Charge	Q_{gs}			5.5		
Gate Drain Charge	Q_{gd}			3.0		

电性能参数 / Electrical Characteristics(Ta=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=20V$ $R_L=1.0\Omega$ $R_{GEN}=3.0\Omega$		7.5		ns
Turn-On Rise Time	t_r			2		
Turn-Off Delay Time	$t_{d(off)}$			23.5		
Turn-Off Fall Time	t_f			3.2		
Reverse Recovery Time	t_{rr}	$I_F=10A,$ $di_F/dt=200A/\mu S$		17		ns
Reverse Recovery Charge	Q_{rr}			15		nC

电参数曲线图 / Electrical Characteristic Curve

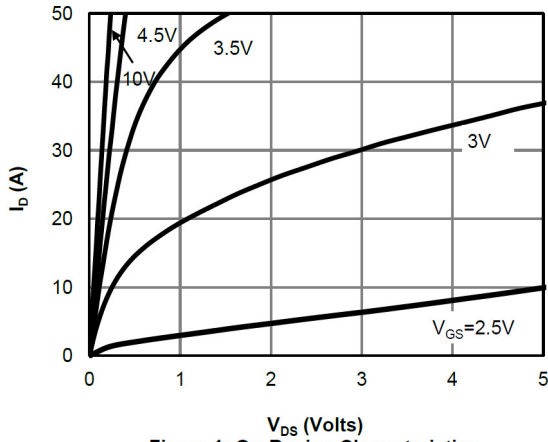


Figure 1: On-Region Characteristics

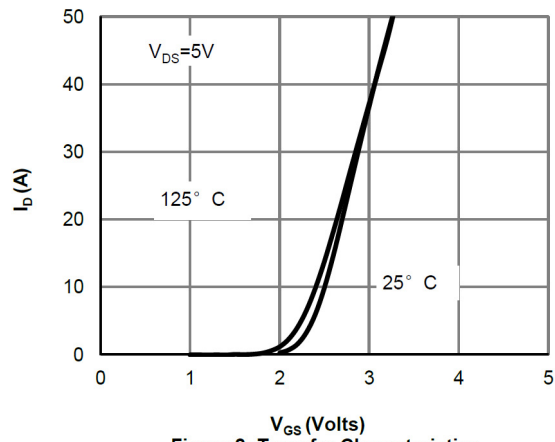


Figure 2: Transfer Characteristics

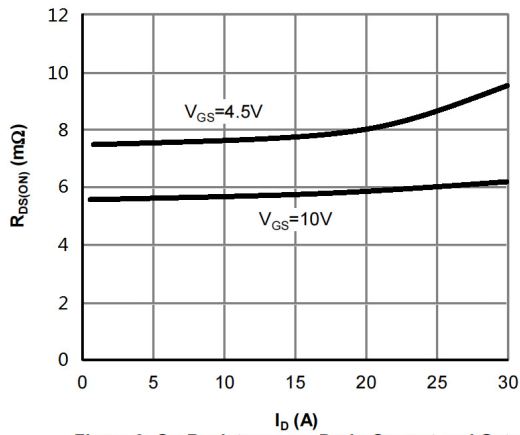


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

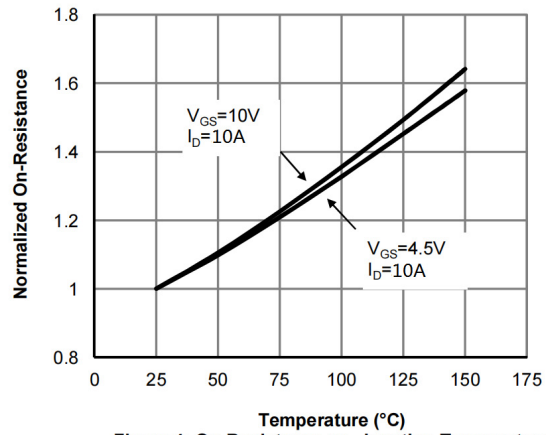


Figure 4: On-Resistance vs. Junction Temperature

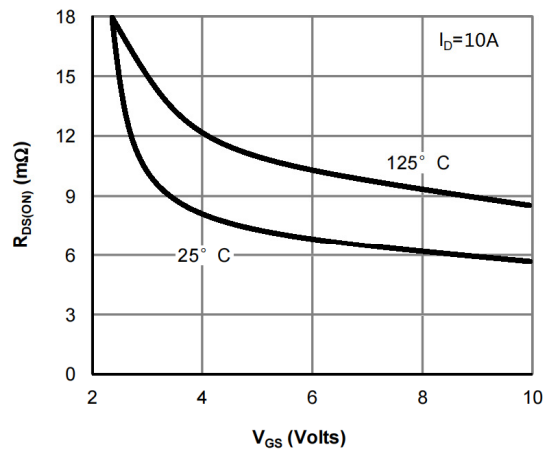


Figure 5: On-Resistance vs. Gate-Source Voltage

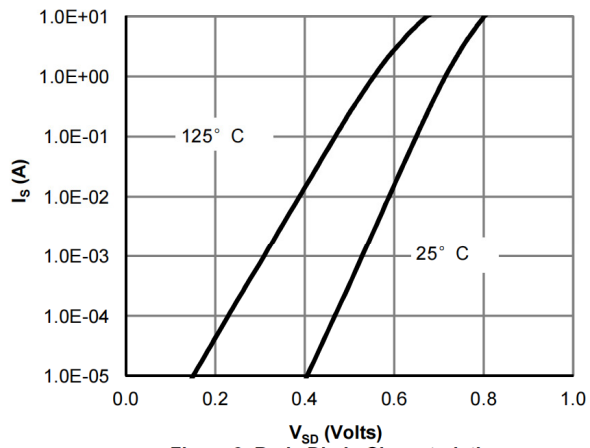


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

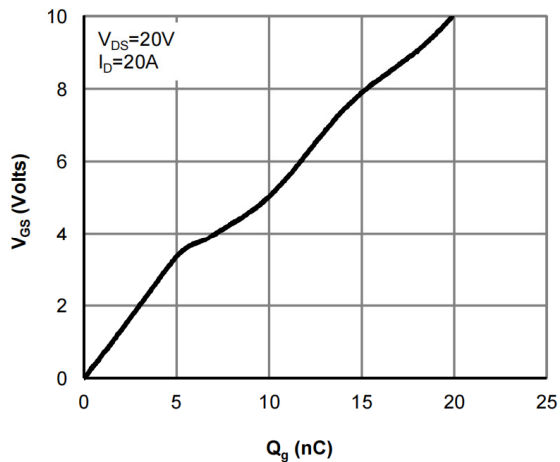


Figure 7: Gate-Charge Characteristics

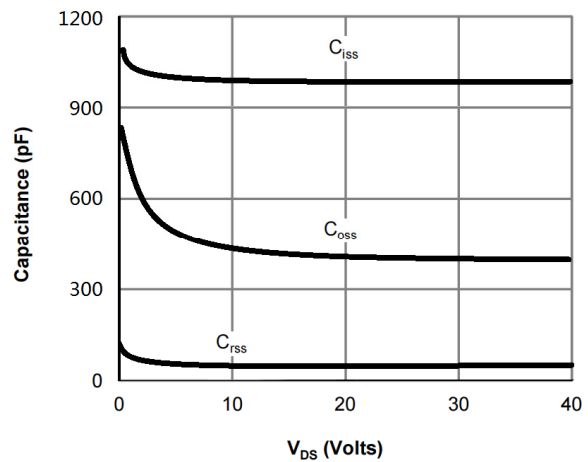


Figure 8: Capacitance Characteristics

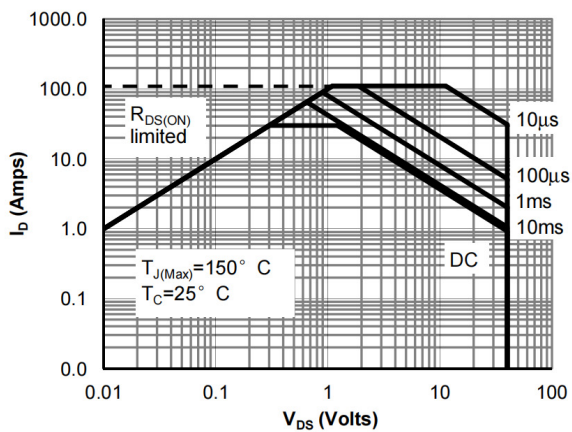
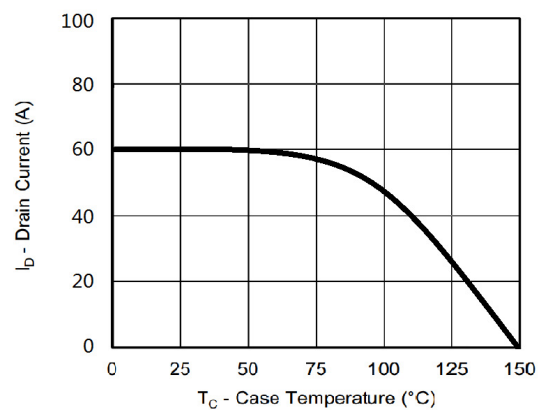
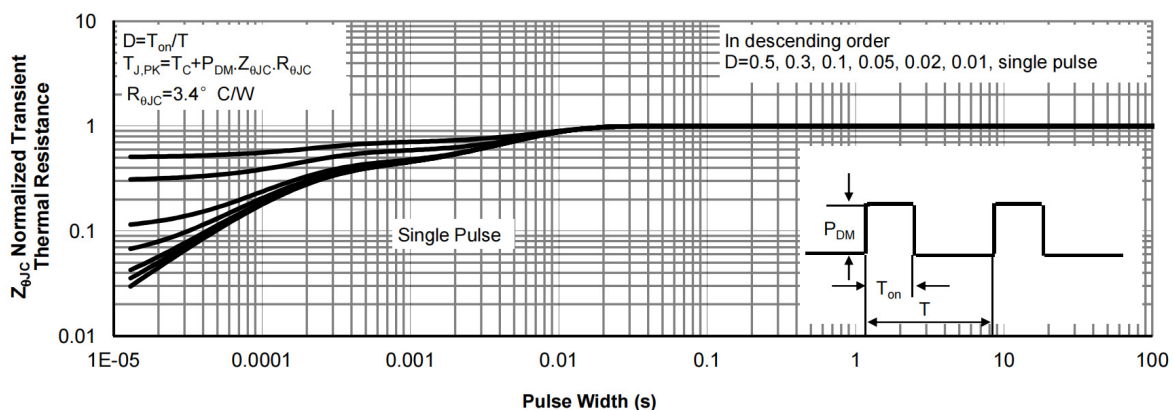
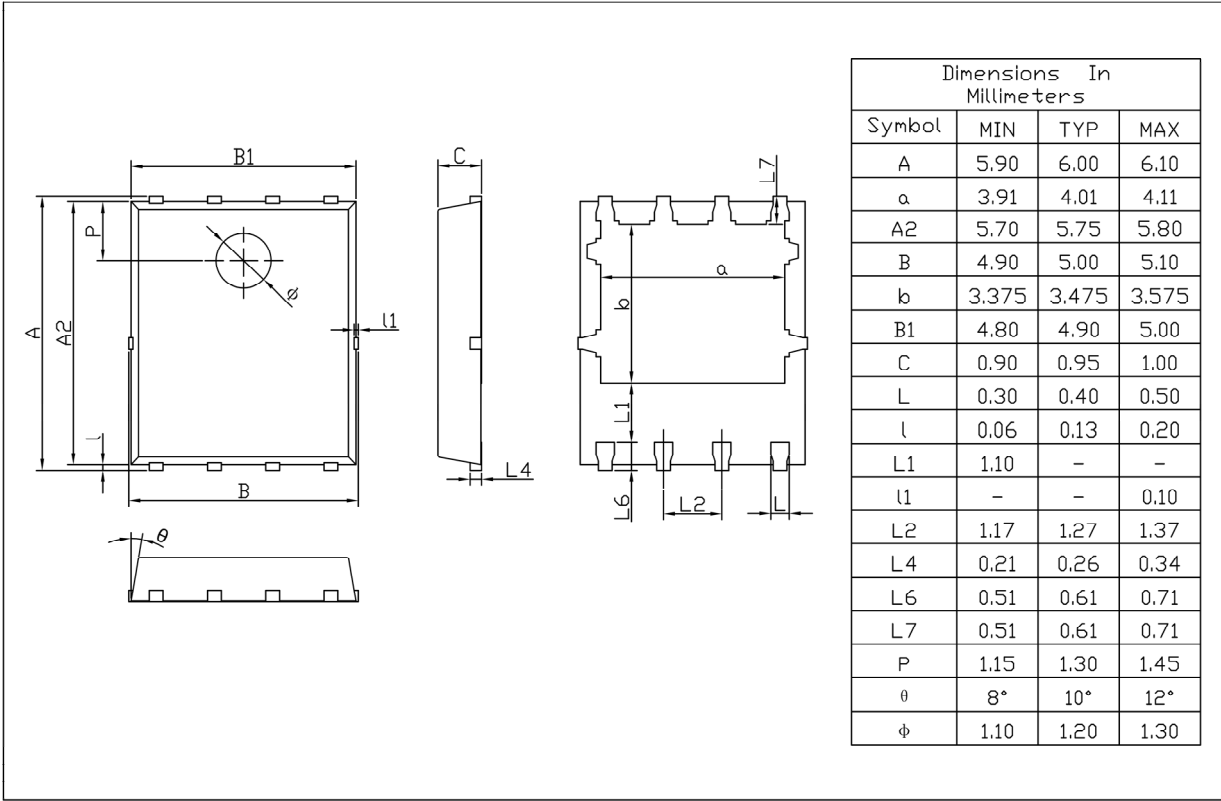
Figure 9: Maximum Forward Biased Safe Operating Area
V_{GS} > or equal to 4.5VFigure 10: Maximum Continuous Drain Current
vs Case Temperature

Figure 11: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

PDFN5×6

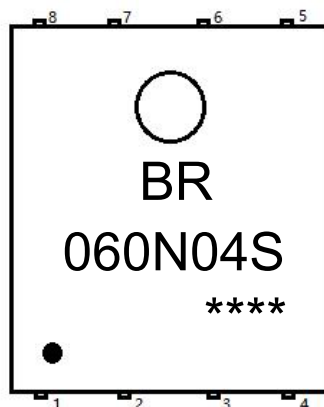
Unit:mm



Rev.01 202209



印章说明 / Marking Instructions



说明：

BR： 为公司代码

060N04S： 为型号代码

****： 为生产批号代码，随生产批号变化

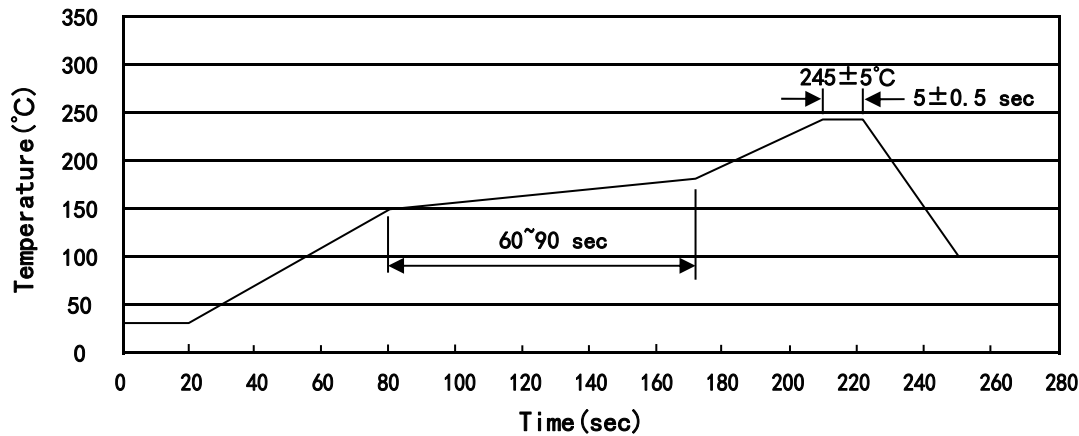
Note：

BR： Company Code

060N04S： Product Type Code

****: Lot No. Code, code change with Lot No

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

- 1、预热温度 150~180°C，时间 60~90sec；
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec；
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

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

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
PDFN5×6	5,000	2	10,000	6	60,000	13"×12	360×360×50	380×335×366

使用说明 / Notices