

BRCs060N04YMQ

Rev.B Mar.-2023

描述 / Descriptions

PDFN5×6A 塑封封装双 N 沟道场效应管。

Dual N-CHANNEL MOSFET in a PDFN5×6A Plastic Package.

特征 / Features

Dual N-Ch

VDS(V)=40V

ID=60.2A

RDS(ON)<6.5mΩ(VGS=10V)

RDS(ON)<12.5mΩ(VGS=4.5V)

符合 AEC-Q101 标准高可靠性要求；无卤产品。

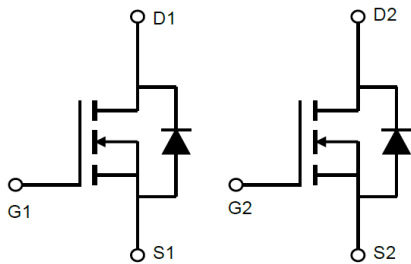
Qualified to AEC-Q101 Standards for High Reliability; HF Product.

用途 / Applications

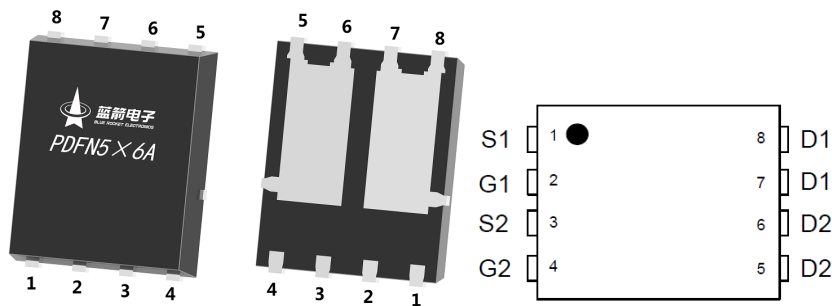
PWM 应用、负载开关、电源管理、LED 调光，满足汽车应用的严格要求。

PWM Application, Load Switch, Power Management, Dimming LED, Meet the stringent requirements of automotive applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



印章代码 / Marking

见印章说明。See Marking Instructions.

极限参数 / Absolute Maximum Ratings(T_a=25°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°C)	60.2	A
Drain Current - Pulsed		I _{DM}	217	A
Gate-Source Voltage		V _{GSS}	±20	V
Single Pulsed Avalanche Energy		E _{AS}	240.1	mJ
Avalanche Current		I _{AS}	24.5	A
Power Dissipation		P _D (T _c =25°C)	36	W
Operating and Storage Temperature Range		T _J , T _{stg}	-55 to 150	°C
Junction-to-Ambient	t ≤ 10	R _{θJA}	45	°C/W
Junction-to-Ambient	Steady-State		80	
Junction-to-Case	Steady-State	R _{θJC}	3.5	

电性能参数 / Electrical Characteristics(T_a=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
		Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V	I _D =250μA	40	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V	V _{GS} =0V			1	μA
Gate-Body Leakage Current Forward	I _{GSS}	V _{GS} =±20V	V _{DS} =0V			±0.1	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS}	I _D =250μA	1.0	1.5	3.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V	I _D =20A		6.1	6.5	mΩ
		V _{GS} =4.5V	I _D =10A		9.1	12.5	mΩ
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V	I _S =1A			1.2	V
Input Capacitance	C _{iss}	V _{DS} =25V f=1.0MHz	V _{GS} =0V		2300		pF
Output Capacitance	C _{oss}				170		
Reverse Transfer Capacitance	C _{rss}				130		
Gate resistance	R _g	V _{GS} =0V f=1MHz	V _{DS} =0V		2.2		Ω
Total Gate Charge	Q _{g(10V)}	V _{GS} =10V I _D =10A	V _{DS} =20V		27.3		nC
Total Gate Charge	Q _{g(4.5V)}				13.4		
Gate Source Charge	Q _{gs}				4.3		
Gate Drain Charge	Q _{gd}				6.2		

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	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=20V$ $R_L=2\Omega$ $R_{GEN}=3\Omega$		6.3		ns
Turn-On Rise Time	t_r			17.1		
Turn-Off Delay Time	$t_{d(off)}$			28.7		
Turn-Off Fall Time	t_f			15.9		

电参数曲线图 / Electrical Characteristic Curve

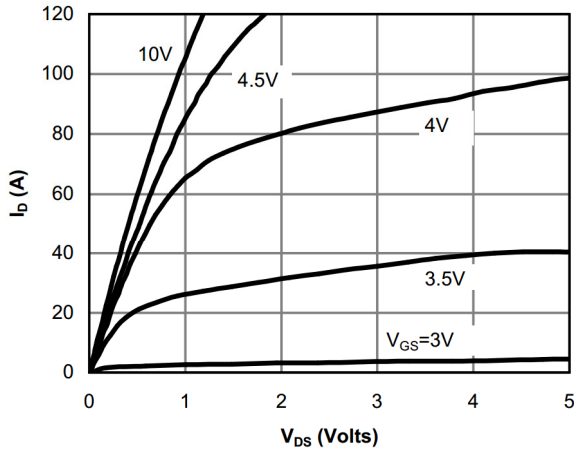


Fig 1: On-Region Characteristics

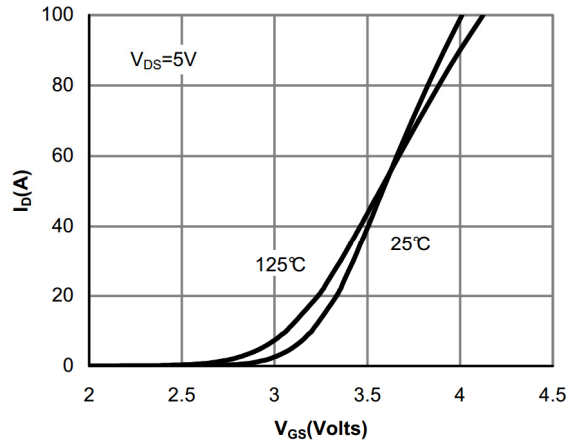


Figure 2: Transfer Characteristics

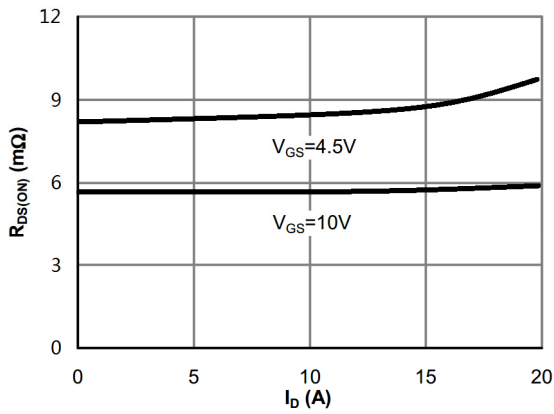


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

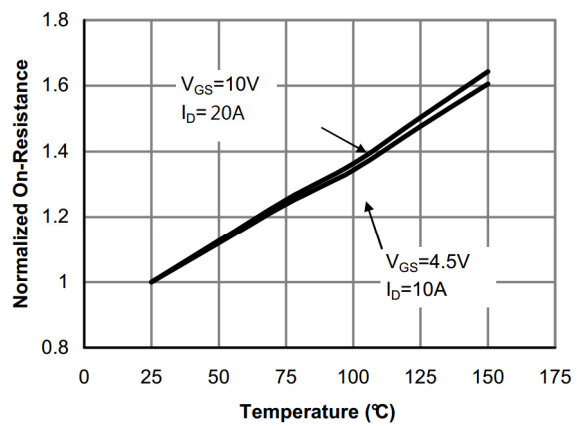


Figure 4: On-Resistance vs. Junction Temperature

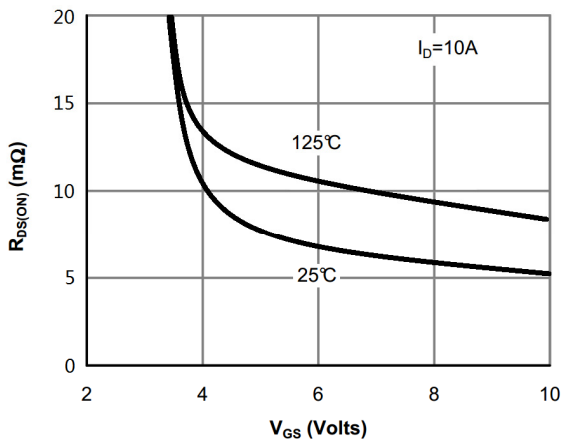


Figure 5: On-Resistance vs. Gate-Source Voltage

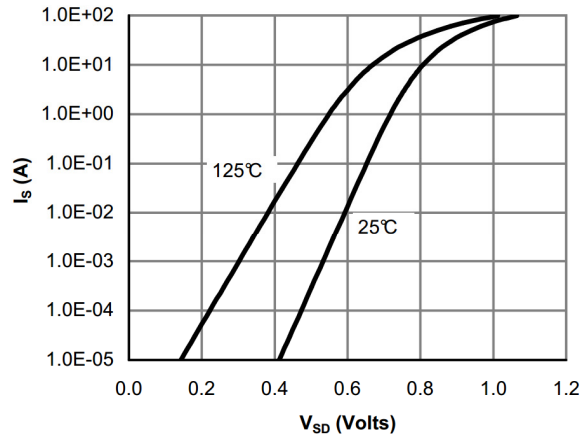


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

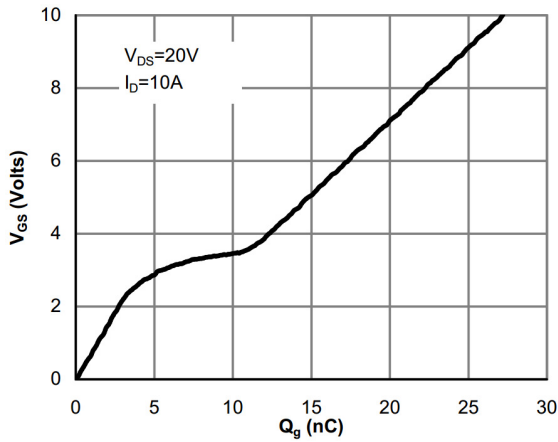


Figure 7: Gate-Charge Characteristics

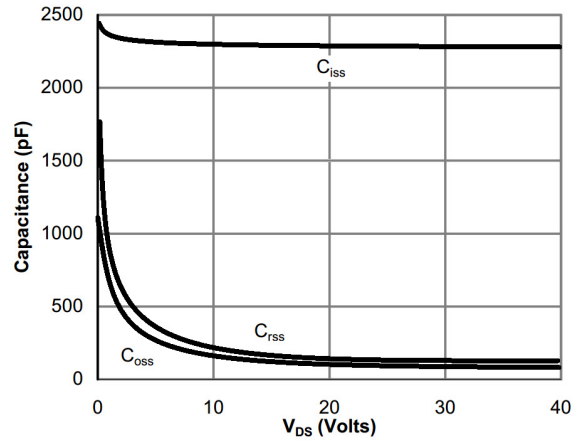


Figure 8: Capacitance Characteristics

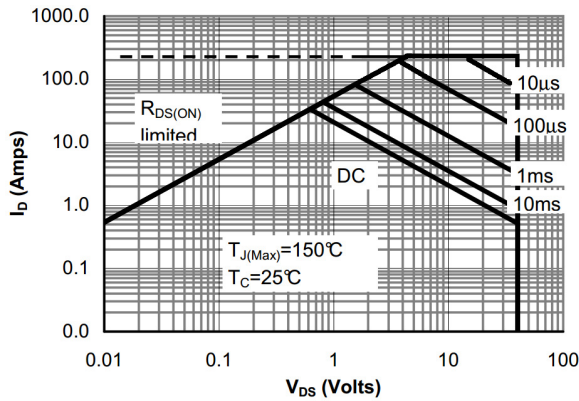


Figure 9: Maximum Forward Biased Safe Operating Area

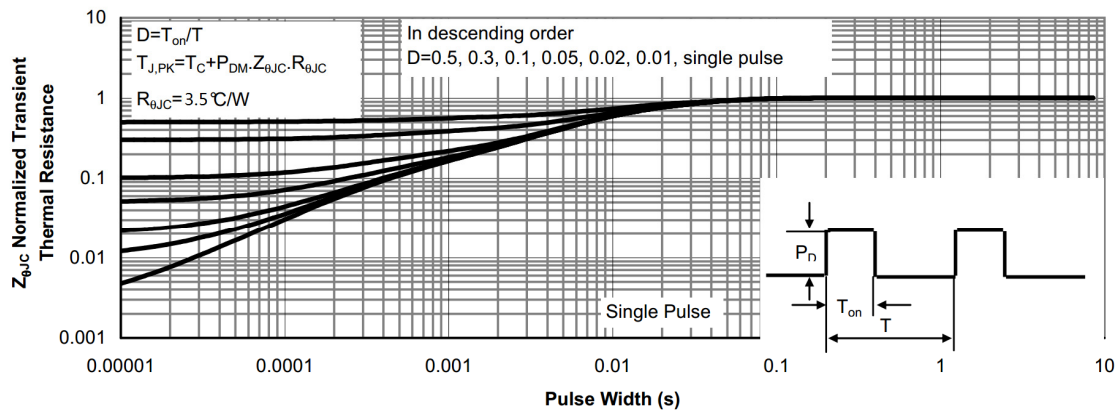
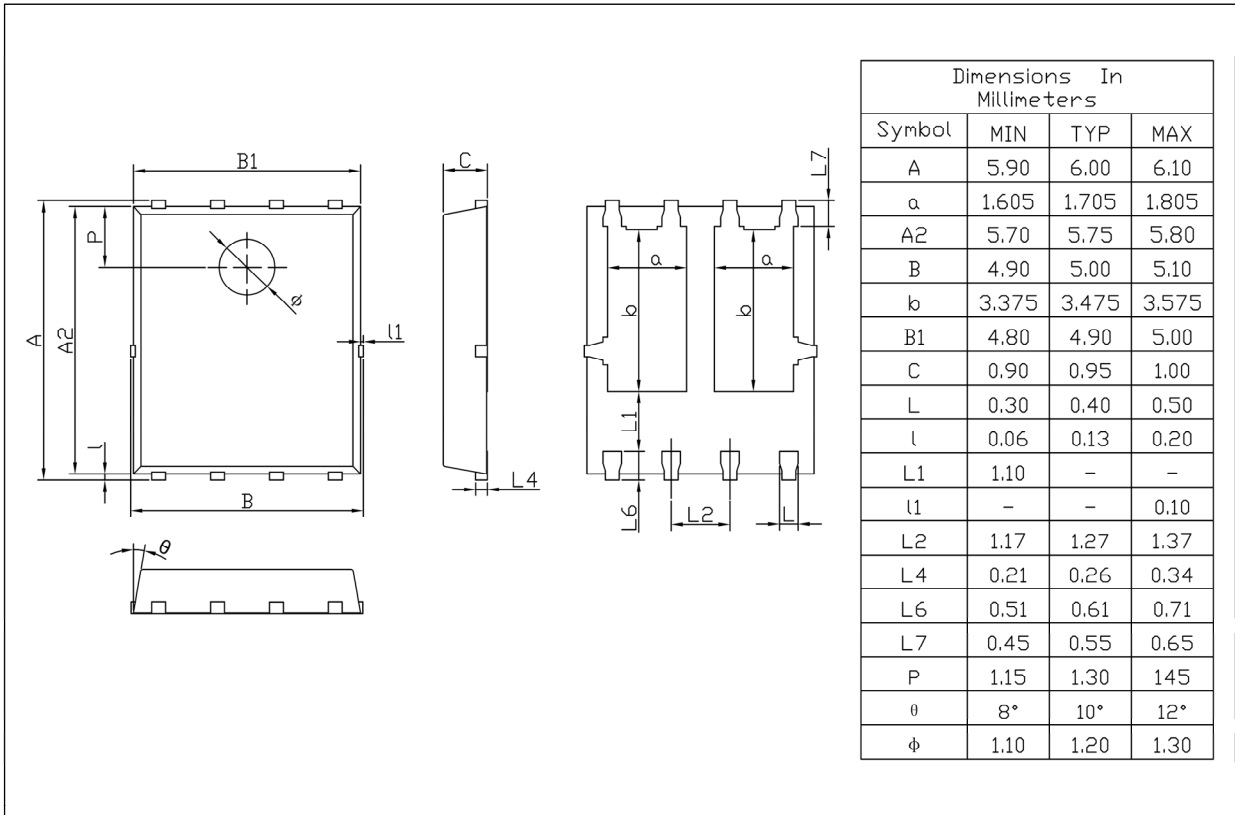


Figure 10: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

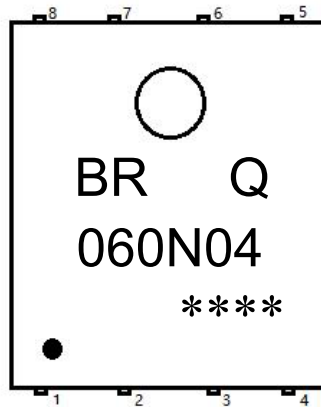
PDFN5 X6A

Unit:mm



Rev.01 202209

印章说明 / Marking Instructions



说明：

BR： 为公司代码

Q： 为汽车无卤产品标识

060N04： 为为产品型号

****： 为生产批号代码，随生产批号变化

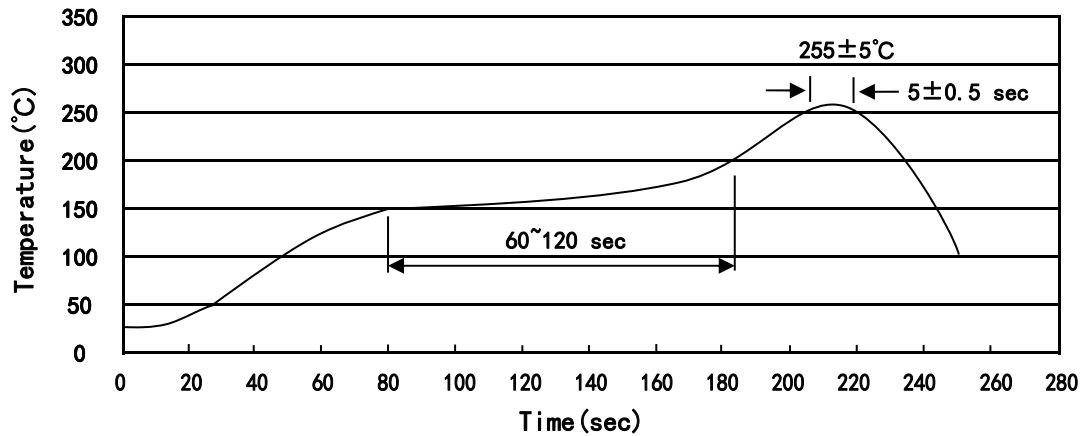
Note：

BR： Company Code

Q: Automobile halogen-free product Code

060N04： Product Type

****: 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 150~200°C，时间 60~120sec;
- 2、峰值温度 255±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:150~200°C, Time:60~120sec.
- 2.Peak Temp.:255±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
PDFN5×6A	5000	2	10000	6	60000	13"×12	360×360×50	380×335×366

使用说明 / Notices