

## 描述 / Descriptions

DFN 3×3A-8L 塑封封装 N 沟道 MOS 场效应管。

N-Channel Enhancement Mode Field Effect Transistor in a DFN 3×3A-8L Plastic Package.

## 特征 / Features

$V_{DS} (V) = 30V$

$I_D = 20 A (V_{GS} = \pm 20V)$

$R_{DS(ON)}@10V \leq 13mR (Typ. 11mR)$

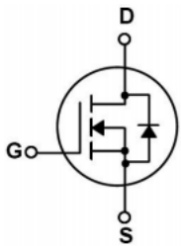
无卤产品。HF Product.

## 用途 / Applications

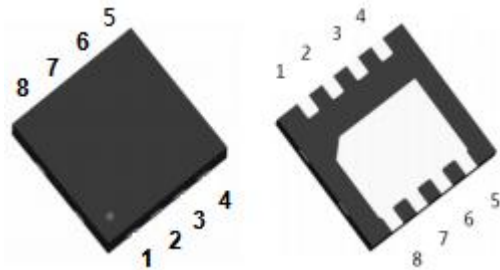
用于低压电路如：汽车电路、DC/DC 转换、便携式产品的电源高效转换。

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



出脚	定义
Pin1	S
Pin2	S
Pin3	S
Pin4	G
Pin5	D
Pin6	D
Pin7	D
Pin8	D

## 放大及印章代码 / $h_{FE}$ Classifications & Marking

见印章说明。See Marking Instructions.

**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	$V_{DSS}$	30	V
Drain Current	$I_D(T_C=25^\circ C)$	20	A
Drain Current - Pulsed	$I_{DM}$	55	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Avalanche Current	$I_{AS}$	12.9	A
Single Pulsed Avalanche Energy	$E_{AS}$	199	mJ
Power Dissipation	$P_D(T_C=25^\circ C)$	15.5	W
Junction Temperature Range	$T_j$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~150	$^\circ C$
Maximum Junction-to-Ambient	$t \leq 10s$	$R_{\theta JA}$	30
	Steady-State	$R_{\theta JA}$	60
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	8

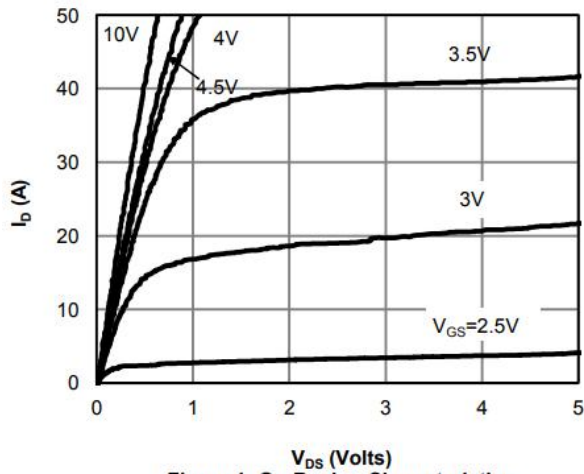
**电性能参数 / Electrical Characteristics(Ta=25°C)**

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
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V$ $V_{GS}=0V$			1.0	$\mu A$
		$V_{DS}=30V$ $T_J=150^\circ C$			50	
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 20V$ $V_{DS}=0V$			$\pm 0.1$	$\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=20.0A$		11	13	m $\Omega$
		$V_{GS}=4.5V$ $I_D=10.0A$		16	20	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1	1.8	3	V
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_F=1.0A$		0.7	1.2	V
Signal Source Resistance	$R_g$	$F=1MHz$		1.67		$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		666		pF
Output Capacitance	$C_{oss}$			26		
Reverse Transfer Capacitance	$C_{rss}$			63		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=0.75\Omega$ $R_{GEN}=3.0\Omega$		5		ns
Turn-On Rise Time	$t_r$			3.5		
Turn-Off Delay Time	$t_{d(off)}$			22		
Turn-Off Fall Time	$t_f$			4.5		

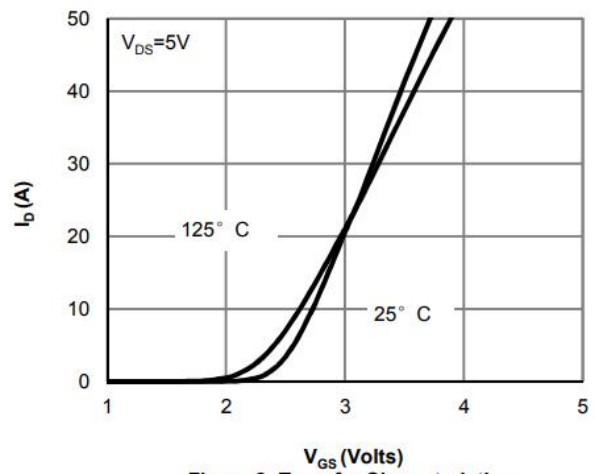
## 电性能参数 / Electrical Characteristics(Ta=25°C)

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
Total Gate Charge	$Q_{g(10V)}$	$V_{DS}=15V$ $V_{GS}=10V$ $I_D=20.0A$		13.6		nC
Total Gate Charge	$Q_{g(4.5V)}$			6.8		
Gate-Source Charge	$Q_{gs}$			1.6		
Gate-Drain Charge	$Q_{gd}$			3.6		

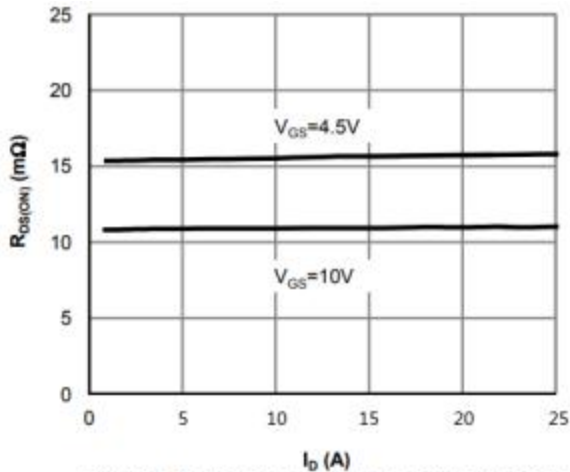
**电参数曲线图 / Electrical Characteristic Curve**



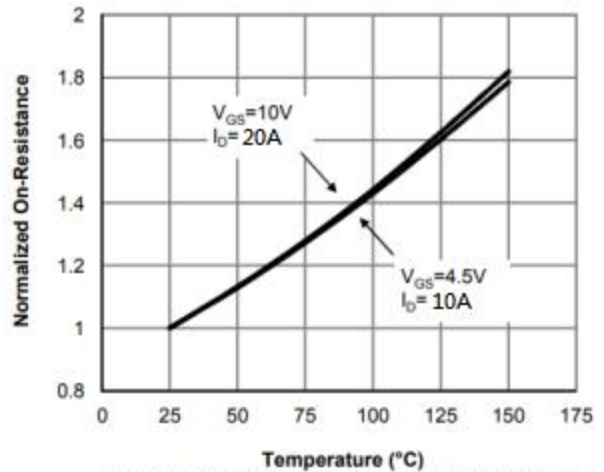
**Figure 1: On-Region Characteristics**



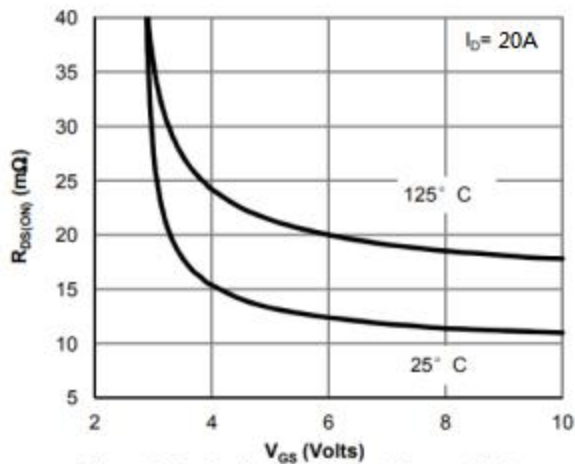
**Figure 2: Transfer Characteristics**



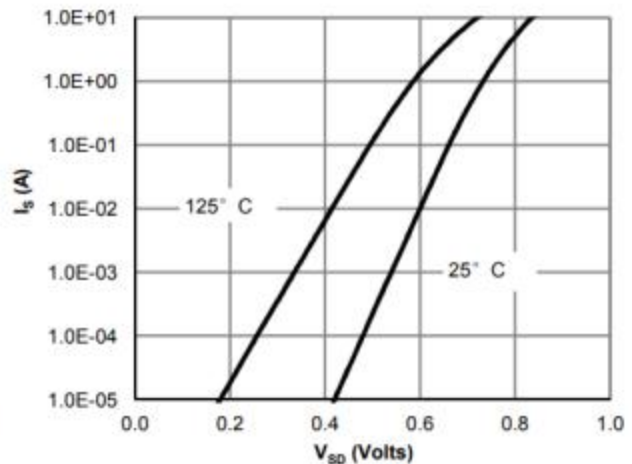
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**



**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**

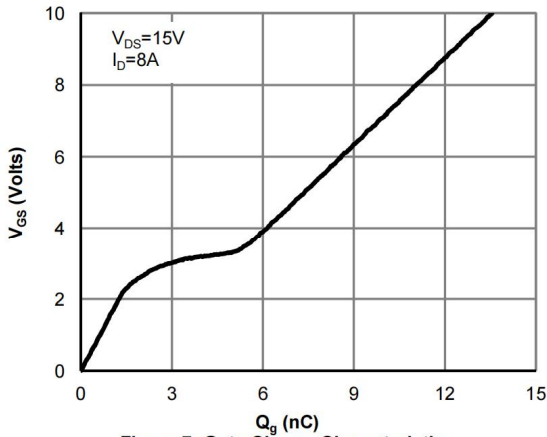


Figure 7: Gate-Charge Characteristics

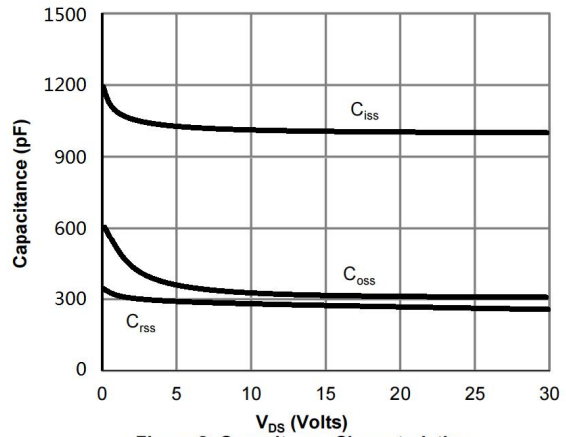


Figure 8: Capacitance Characteristics

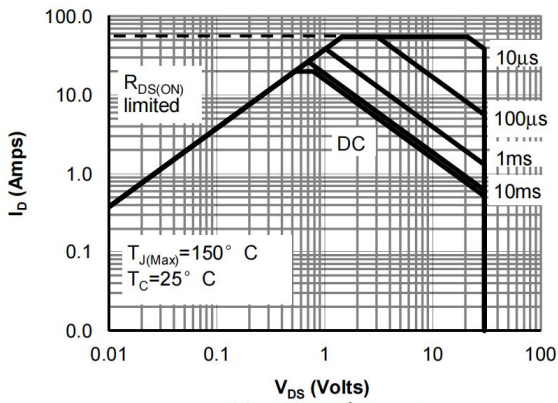


Figure 9: Maximum Forward Biased Safe Operating Area

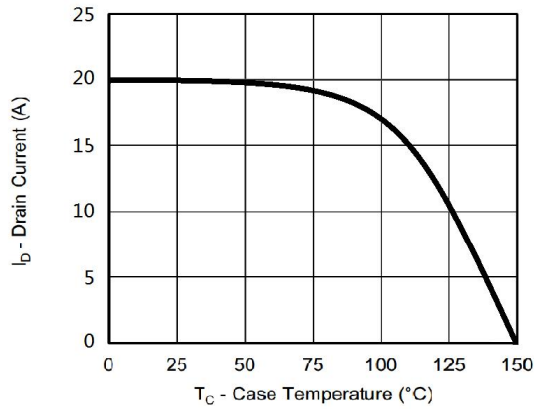


Figure 10: Maximum Continuous Drain Current vs Case Temperature

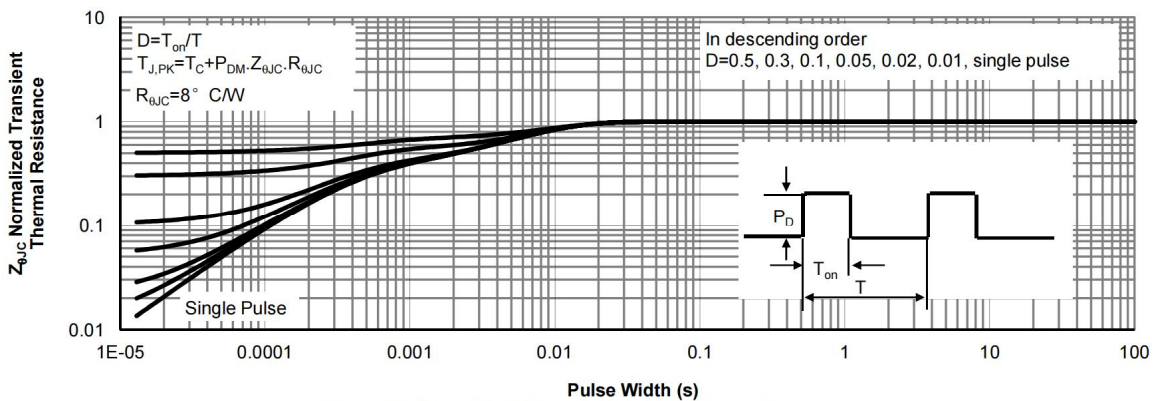
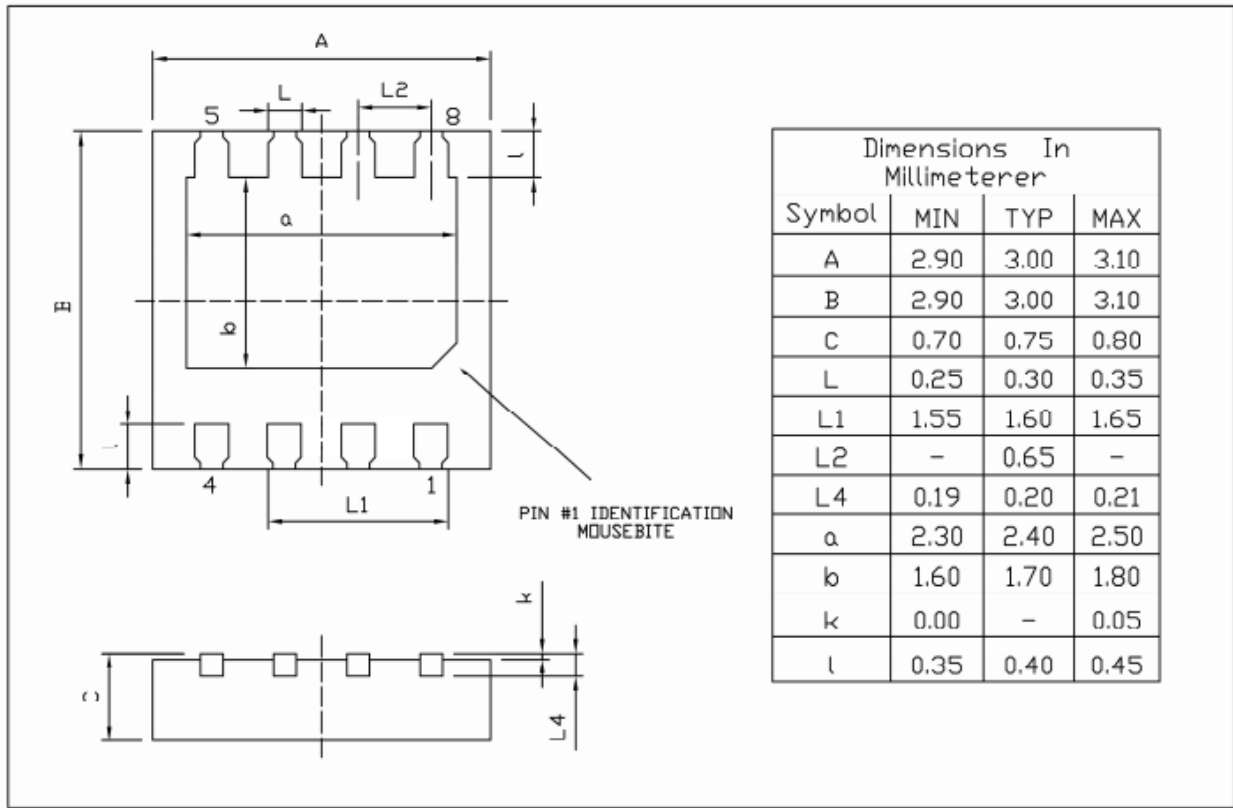


Figure 11: Normalized Maximum Transient Thermal Impedance

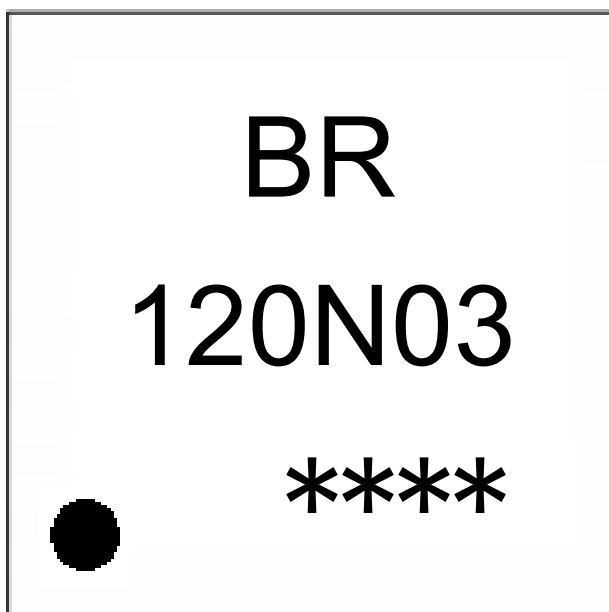
**外形尺寸图 / Package Dimensions**

DFN3X3A-8L

Unit:mm



**印章说明 / Marking Instructions**



说明：

BR： 为公司代码

120N03： 为型号代码

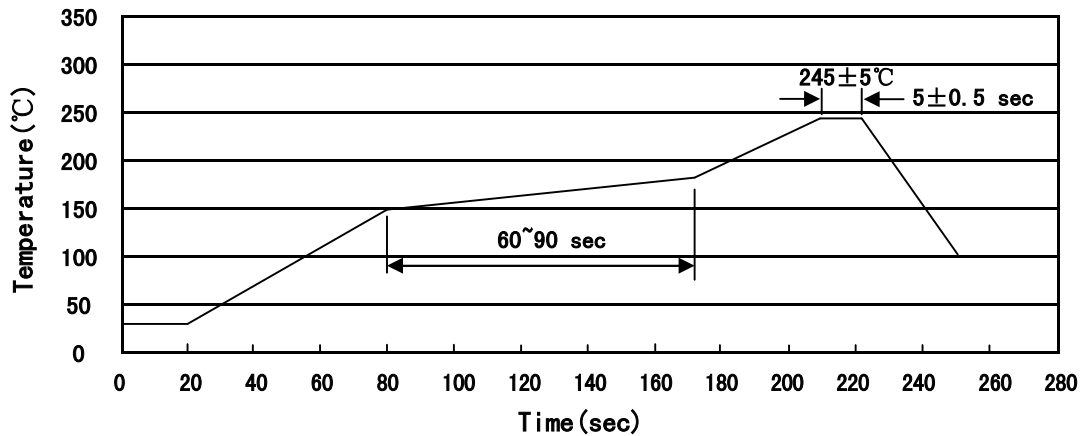
\*\*\*\*： 为生产批号代码，随生产批号变化

Note:

BR: Company Code

120N03: 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 150~180°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 <sup>3</sup> )		
	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
DFN 3×3A-8L	5,000	2	10,000	6	60,000	13" ×12	360×360×50	380×335×366

**使用说明 / Notices**