

## / Descriptions

PDFN 3×3A-8L N MOS

N-Channel Enhancement Mode Field Effect Transistor in a PDFN3×3A-8L Plastic Package.

## / Features

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

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

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

AEC-Q101

Qualified to AEC-Q101 Standards for High Reliability,

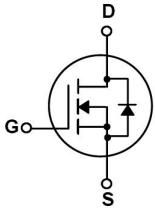
HF Product.

## / Applications

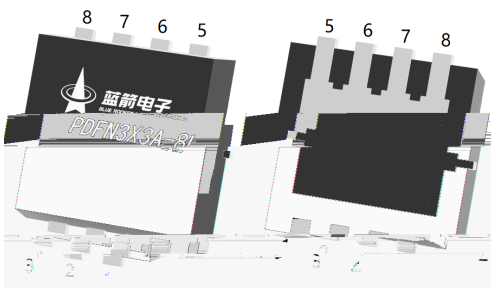
DC/DC

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies, Meet the stringent requirements of automotive applications.

## / Equivalent Circuit



## / Pinning



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

## / Marking

See Marking Instructions.

/ Absolute Maximum Ratings( $T_a=25$  )

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		$V_{DSS}$	30	V
Drain Current		$I_D(T_c=25)$	20	A
Drain Current - Pulsed		$I_{DM}$	55	A
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Single Pulsed Avalanche Energy		$E_{AS}$	199	mJ
Avalanche Current		$I_{AS}$	12.9	A
Power Dissipation		$P_D(T_c=25)$	15.5	W
Operating and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	
Junction-to-Ambient	$t \leq 10$	$R_{\theta JA}$	30	/W
Junction-to-Ambient	Steady-State		60	
Junction-to-Case	Steady-State	$R_{\theta JC}$	8	

## / Electrical Characteristics(Ta=25 )

Parameter	Symbol	Test Conditions		Min	Typ	Max	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	$\mu A$
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 20V$	$V_{DS}=0V$			$\pm 0.1$	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$	$I_D=250\mu A$	1.0	1.8	3.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$	$I_D=20A$		11	13	$m\Omega$
		$V_{GS}=4.5V$	$I_D=10A$		16	20	$m\Omega$
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$	$I_S=1A$			1.2	V
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $f=1.0MHz$	$V_{GS}=0V$		666		pF
Output Capacitance	$C_{oss}$				26		
Reverse Transfer Capacitance	$C_{rss}$				63		
Gate resistance	$R_g$	$V_{GS}=0V$ $f=1MHz$	$V_{DS}=0V$		1.7		$\Omega$
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V$ $I_D=8A$	$V_{DS}=15V$		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		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $R_L=1.87\Omega$	$V_{DS}=15V$ $R_{GEN}=4.5\Omega$		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		

/ Electrical Characteristic Curve

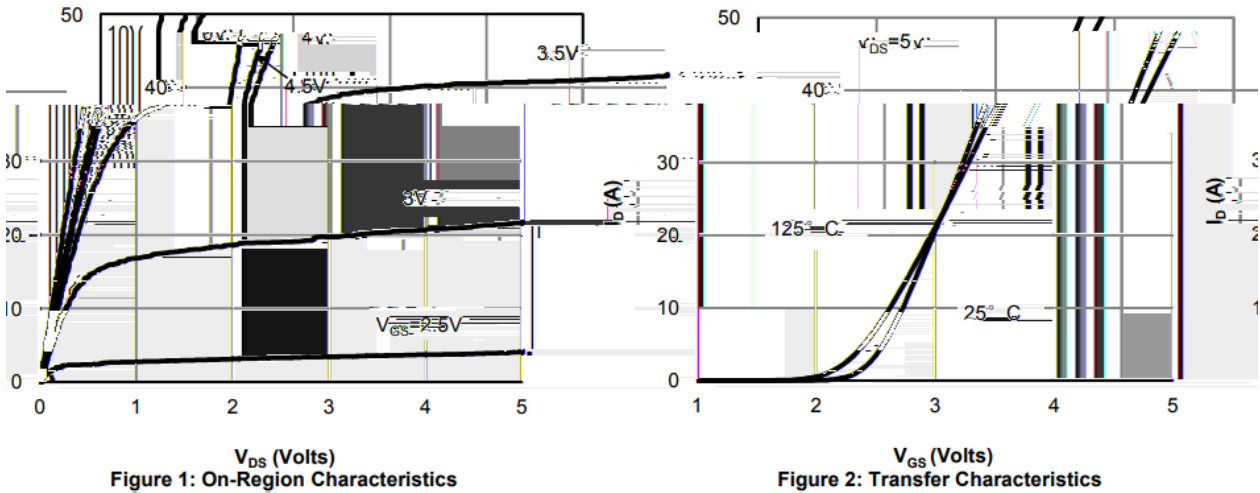


Figure 1: On-Region Characteristics

Figure 2: Transfer Characteristics

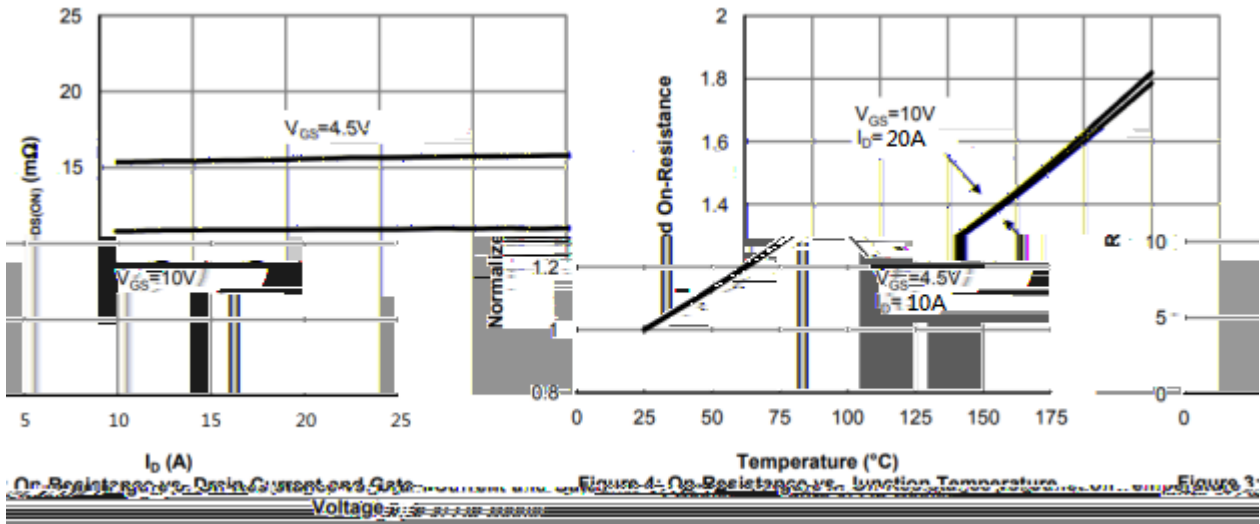


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

Figure 4: On-Resistance vs. Junction Temperature

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

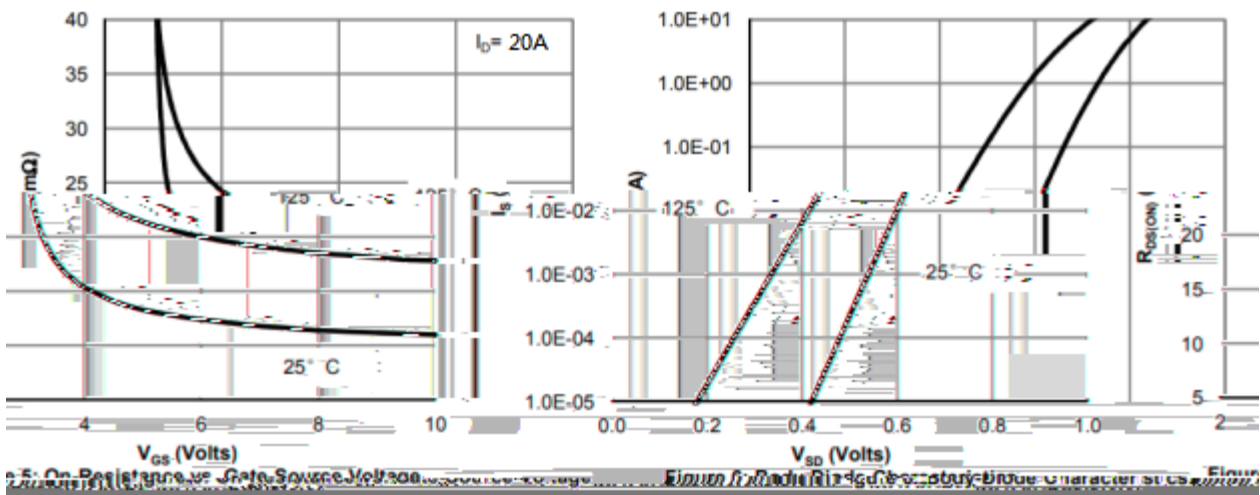


Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: On-Resistance vs. Drain-Source Voltage

/ Electrical Characteristic Curve

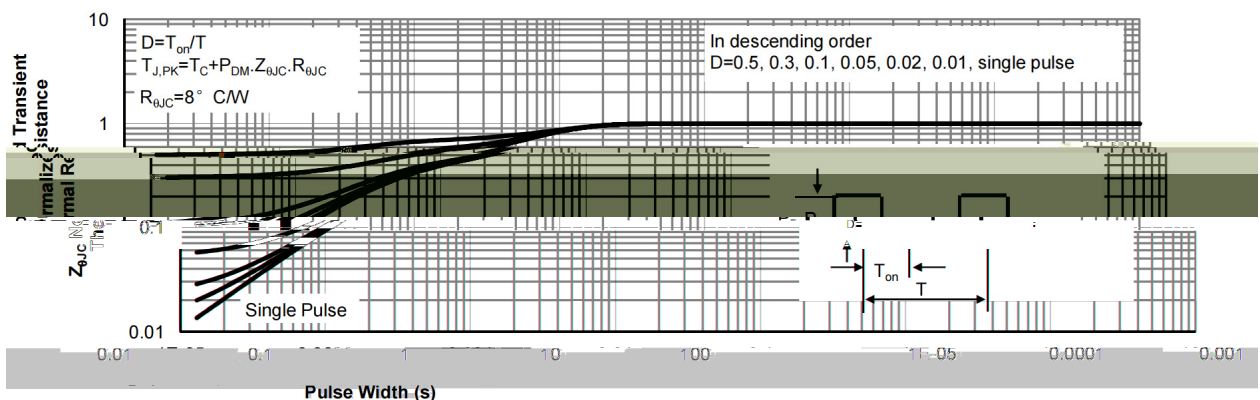
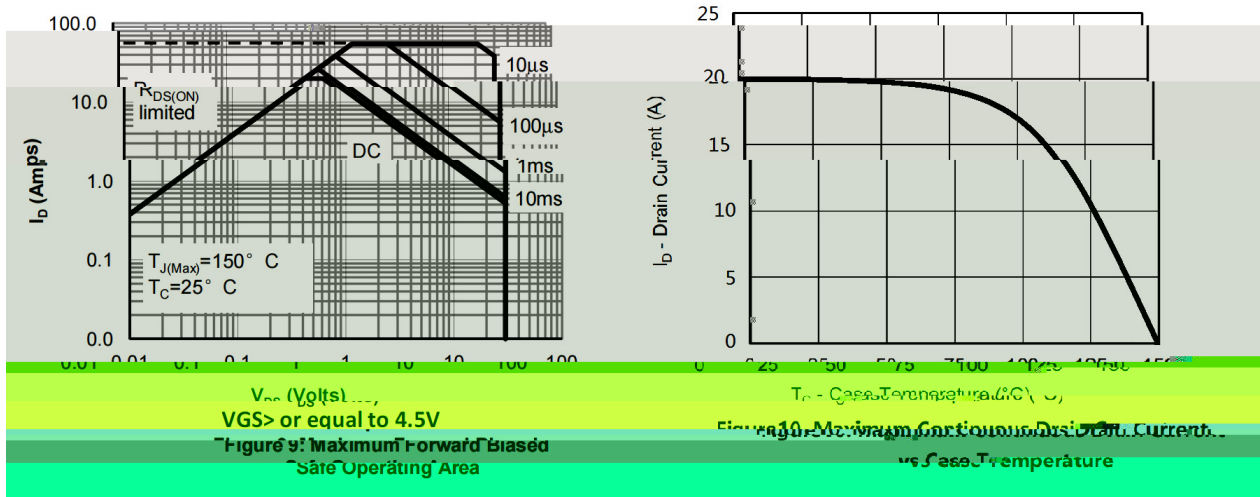
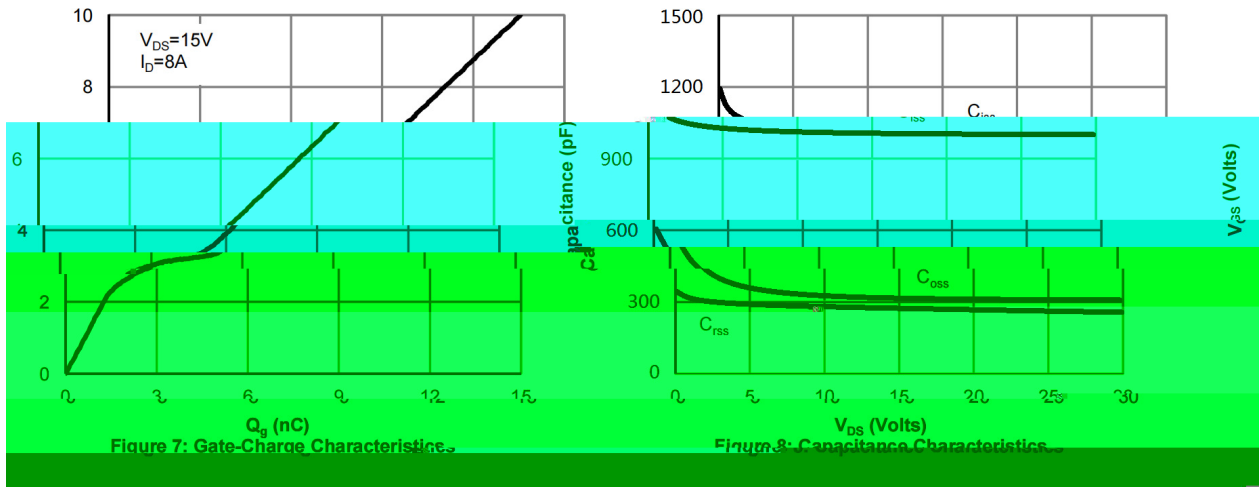
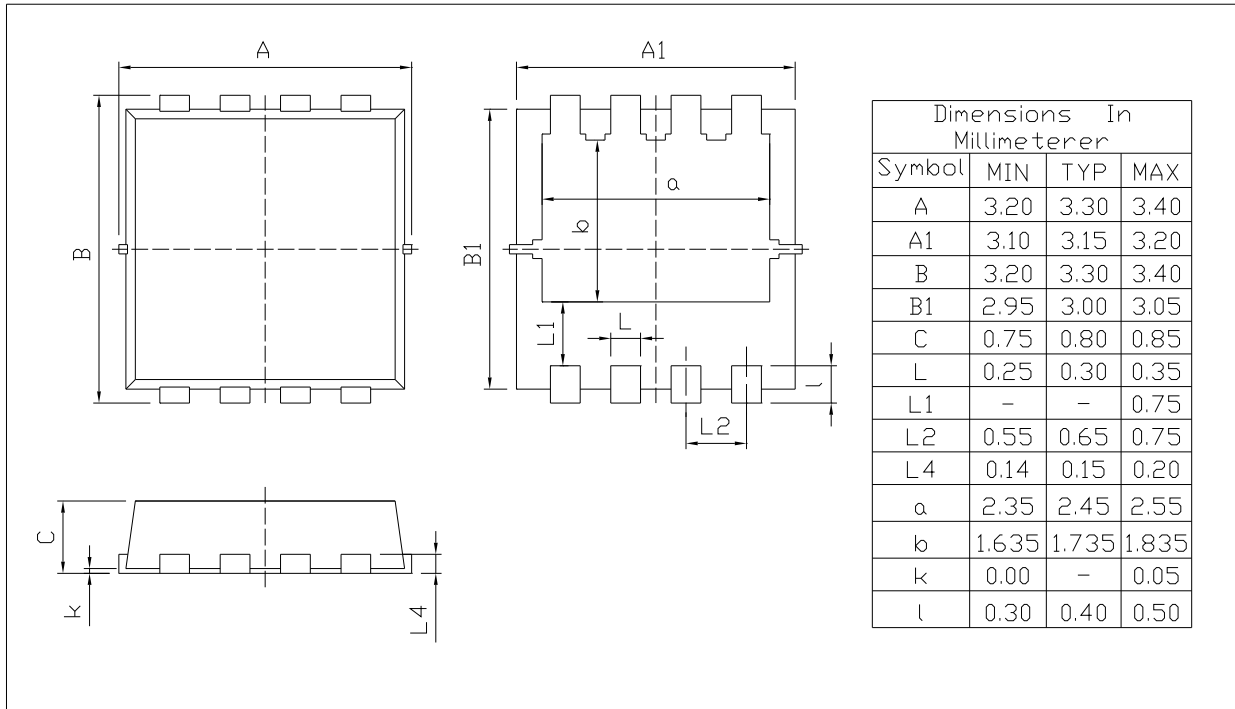


Figure 11: Normalized Maximum Transient Thermal Impedance

**/ Package Dimensions**

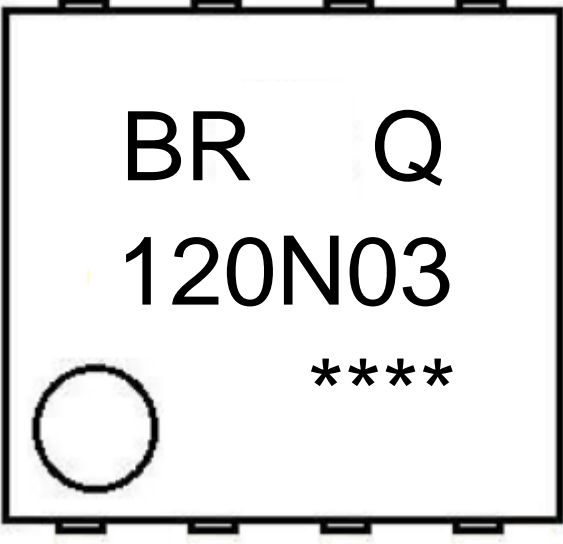
PDFN3X3A-8L

Unit:mm



Rev.00 202011

**/ Marking Instructions**



BR

Q

120N03

\*\*\*\*

Note:

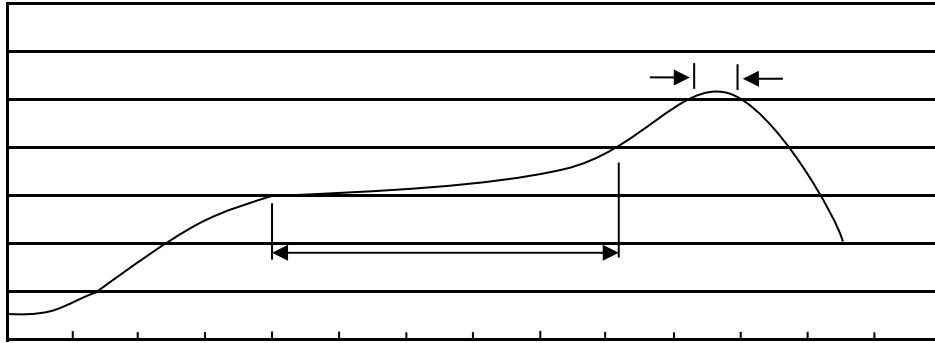
BR: Company Code

Q: Automobile halogen-free product Code

120N03: Product Type Code

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

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



Note:

- |   |       |     |           |          |   |
|---|-------|-----|-----------|----------|---|
| 1 | 150   | 200 | 60        | 120sec;  | 1.Preheating:150~200 , Time:60~120sec.  |
| 2 | 255±5 |     | 5±0.5sec; |          | 2.Peak Temp.:255±5 , Duration:5±0.5sec. |
| 3 |       |     | 2         | 10 /sec. | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

260±5                      10±1 sec.                      Temp.:260±5                      Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (unit mm <sup>3</sup> )			
PDFN3x3A-8L	5,000	2	10,000	6	60,000	13	x12	360x360x50	380x335x366

/ Notices