

/ Descriptions

PDFN5×6 N

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

/ Features $V_{DS}(V)=60\text{ V}$ $I_D=81\text{ A}$ $R_{DS(ON)}@10\text{ V } 5.2\text{ m}\Omega$ (Typ. $4.9\text{ m}\Omega$) $R_{DS(ON)}@4.5\text{ V } 7.5\text{ m}\Omega$ (Typ. $6.8\text{ m}\Omega$)

AEC-Q101

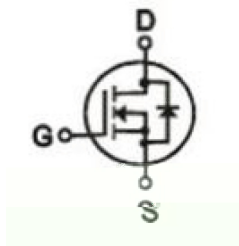
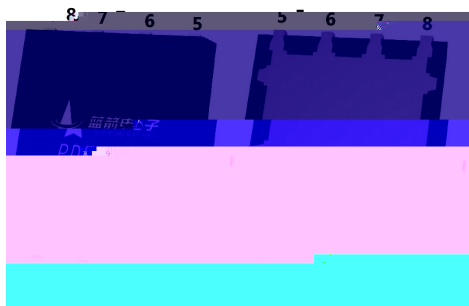
Qualified to AEC-Q101 Standards for High Reliability,

HF Product.

/ Applications

DC-DC

Secondary Side Synchronous Rectification, DC-DC Converter, Motor Control, Load Switching, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit**/ Pinning**

PIN1 2 3 S PIN4 G PIN5 6 7 8 D

/ Marking

See Marking Instructions.

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Continuous Drain Current		$I_D(T_c=25^\circ\text{C})$	81	A
Pulsed Drain Current		I_{DM}	256	A
Gate-Source Voltage		V_{GS}	20	V
Power Dissipation		$P_D(T_c=25^\circ\text{C})$	65	W
Avalanche energy($L=0.5\text{mH}$)		E_{AS}	253	mJ
Avalanche Current($L=0.5\text{mH}$)		I_{AS}	22.5	A
Junction and Storage Temperature Range		T_j, T_{stg}	-55 to 150	
Maximum Junction-to-Ambient	$t \leq 10\text{s}$	R_{JA}	23	$^\circ\text{C/W}$
	Steady-State		52	
Maximum Junction-to-Case	Steady-State	R_{JC}	1.92	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$ $I_D=250\text{A}$	60	70		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60\text{V}$ $V_{GS}=0\text{V}$			1	A
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\text{A}$	1	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ $I_D=20\text{A}$		4.9	5.2	m
		$V_{GS}=4.5\text{V}$ $I_D=10\text{A}$		6.8	7.5	
Forward On Voltage	V_{SD}	$V_{GS}=0\text{V}$ $I_S=1\text{A}$			1.2	V
Gate resistance	R_g	$f=1\text{MHz}$		1.3		
Input Capacitance	C_{iss}	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		1900		pF
Output Capacitance	C_{oss}			1000		
Reverse Transfer Capacitance	C_{rss}			60		
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10\text{V},$ $V_{DS}=30\text{V},$ $I_D=20\text{A}$		45		nC
Total Gate Charge	$Q_{g(4.5V)}$			25		
Gate Source Charge	Q_{gs}			6.8		
Gate Drain Charge	Q_{gd}			8.7		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=30V$ $R_L=1.5\Omega$ $R_{GEN}=3\Omega$		7.6		ns
Turn-On Rise Time	t_r			6.7		
Turn-Off Delay Time	$t_{d(off)}$			39		
Turn-Off Fall Time	t_f			8.5		

/ Electrical Characteristic Curve

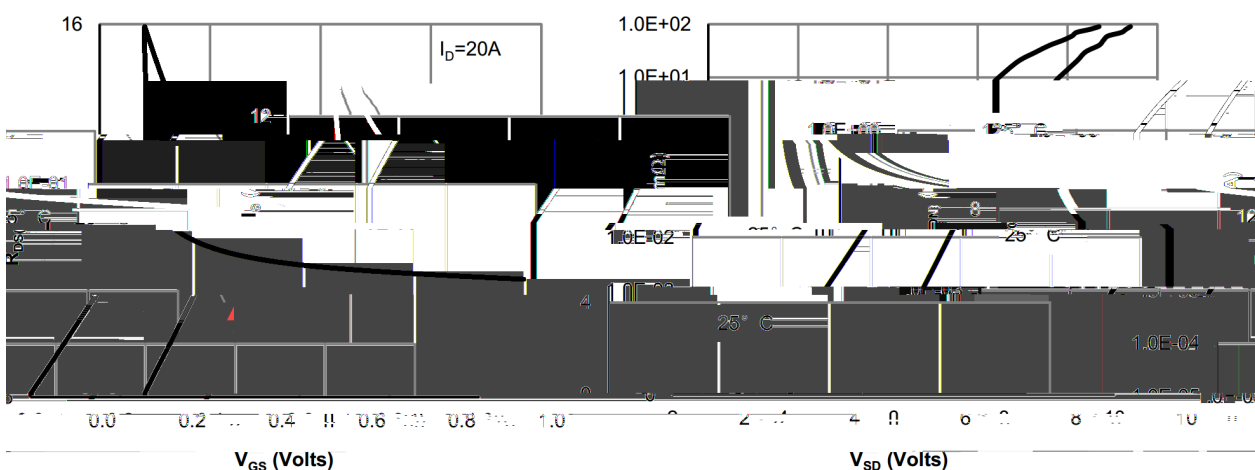
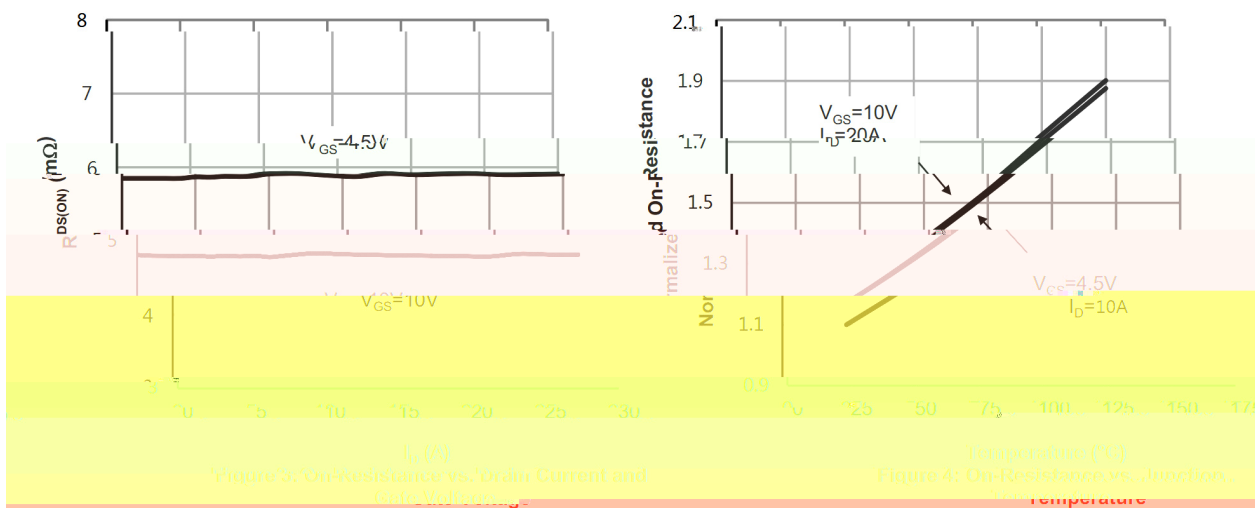
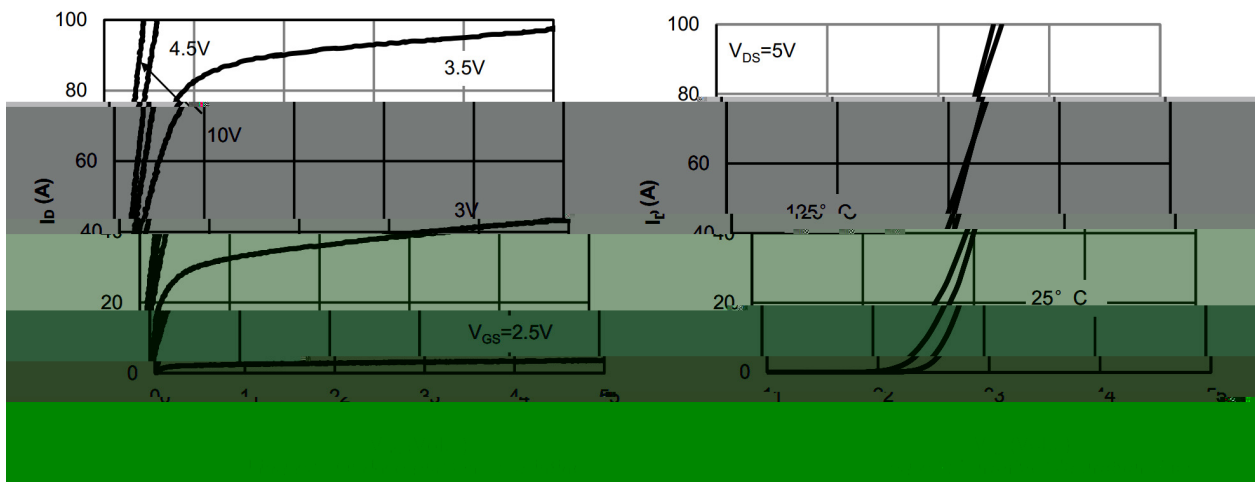


Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: Body-Diode Characteristics

/ Electrical Characteristic Curve

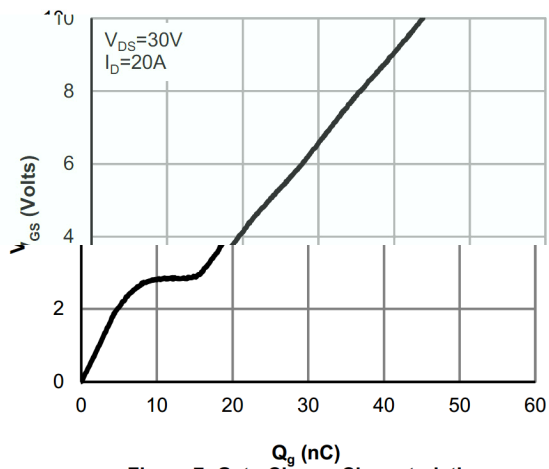


Figure 7: Gate Charge Characteristics

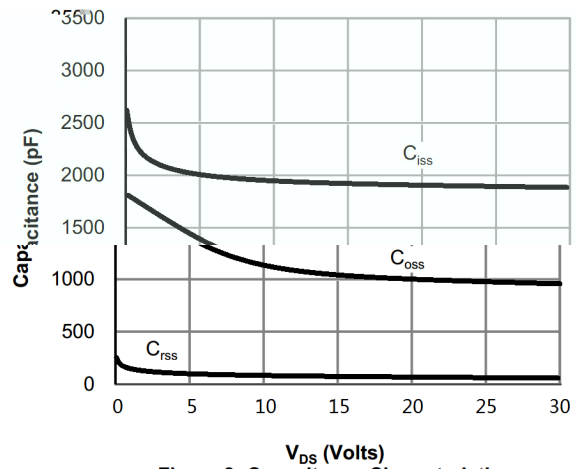


Figure 8: Capacitance Characteristics

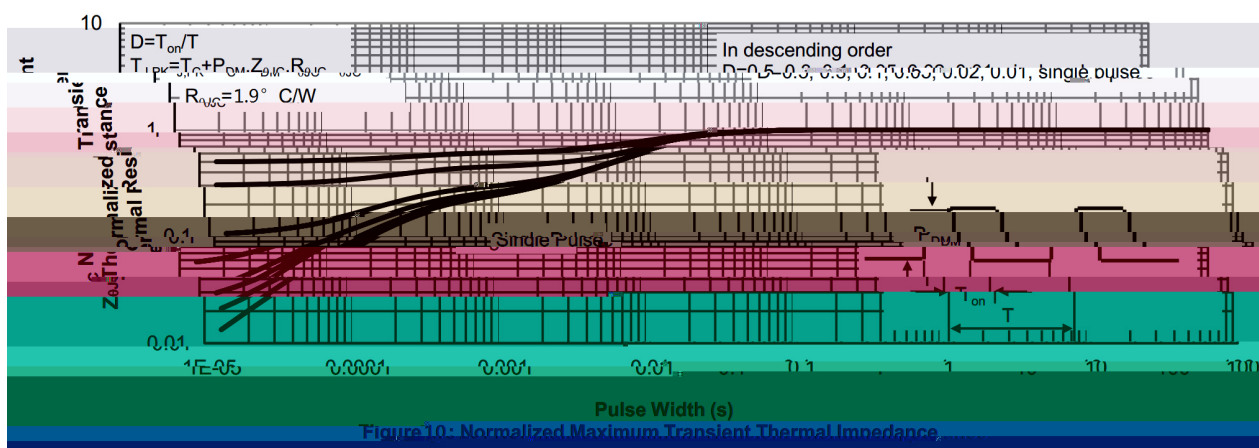
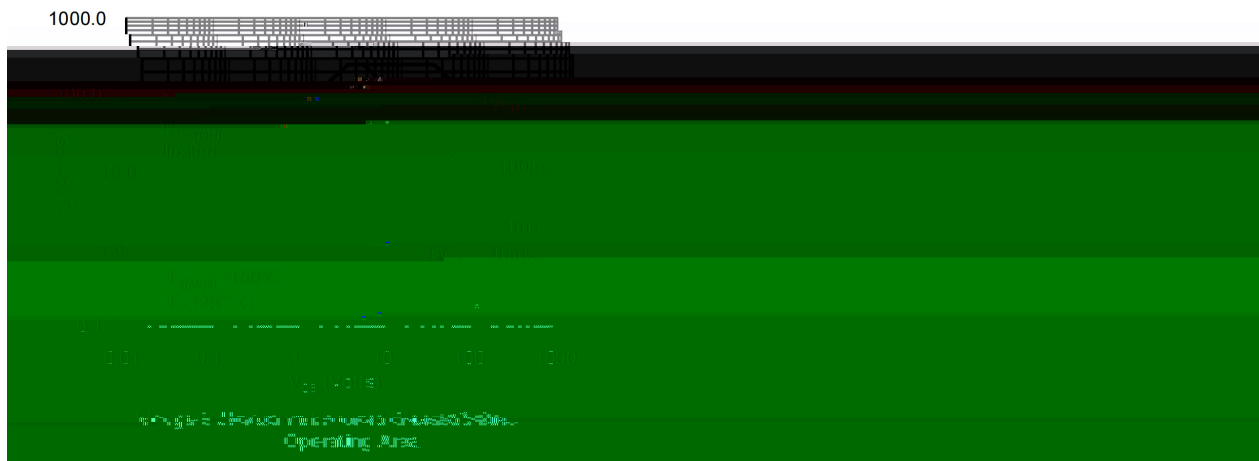
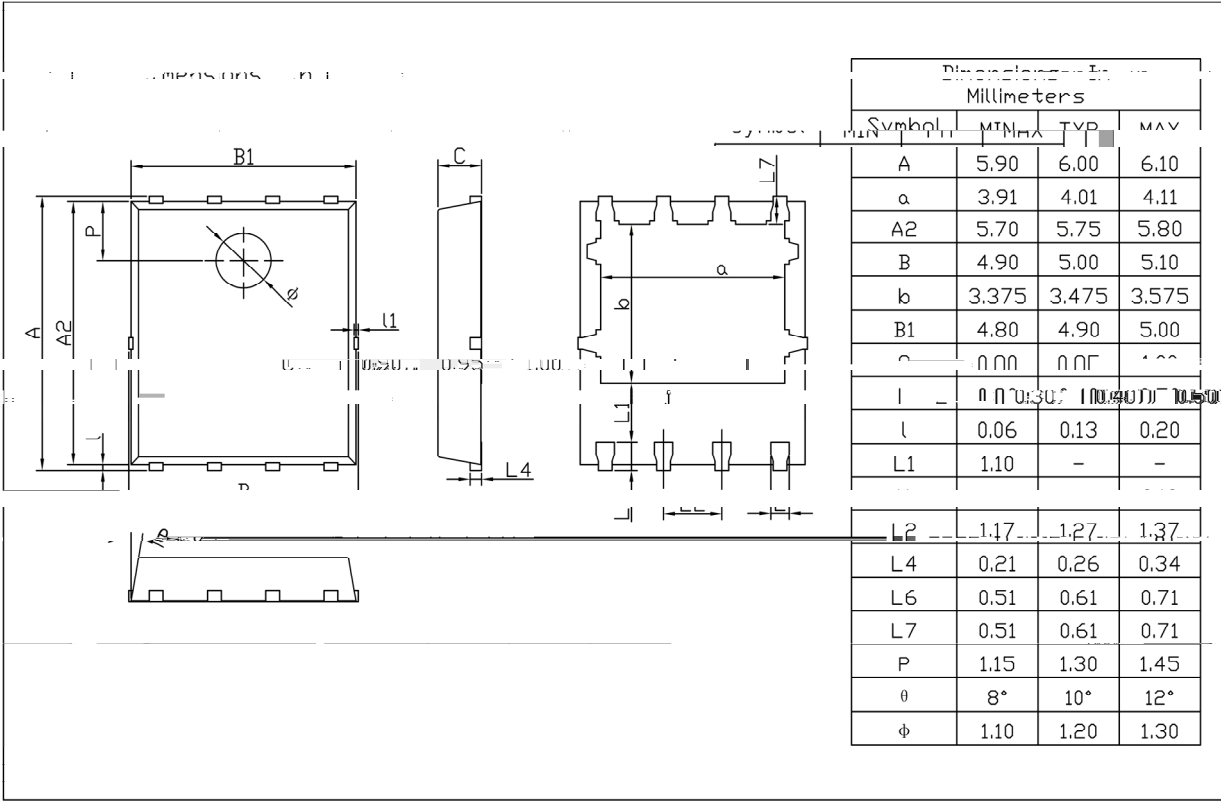


Figure 10: Normalized Maximum Transient Thermal Impedance

I Package Dimensions

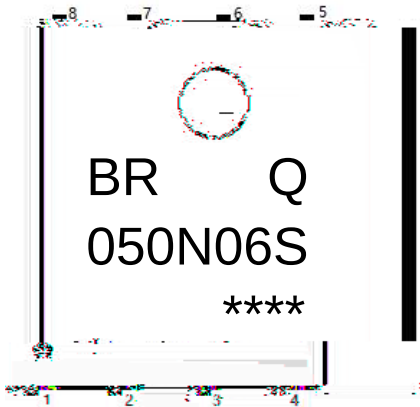
PDFN5 X6

Unit:mm



Rev.01 202209

/ Marking Instructions



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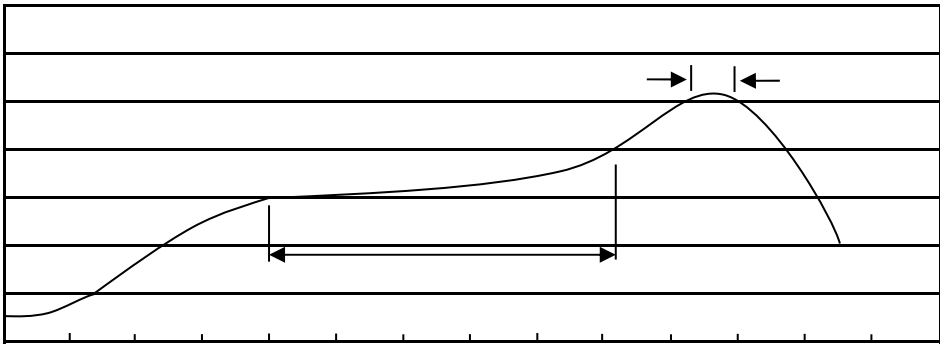
Q

050N06S

Note

BR	Company Code
Q:	Automobile halogen-free product Code
050N06S	Product Type Code
****:	Lot No. Code, code change with Lot No

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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 ³)		
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box
PDFN5×6	5,000	2	10,000	6	60,000	13"×12	360×360×50	380×335×366

/ Notices