

/ Descriptions

PDFN5×6A

MOS

Complementary Enhancement MOSFET in a PDFN5 6A Plastic Package.

/ Features

N-channel

P-channel

 $V_{DS}(V)=30V$ $V_{DS}(V)=-30V$ $I_D=39.5A$ $I_D=-39A$ $R_{DS(ON)}<10m\Omega(V_{GS}=10V)$ $R_{DS(ON)}<12m\Omega(V_{GS}=-10V)$ $R_{DS(ON)}<15m\Omega(V_{GS}=4.5V)$ $R_{DS(ON)}<20m\Omega(V_{GS}=-4.5V)$

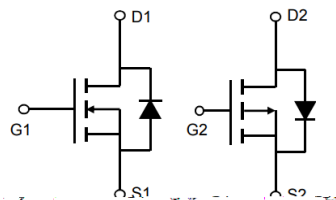
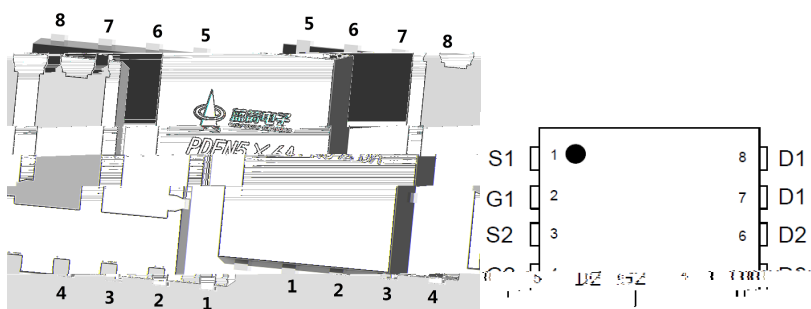
AEC-Q101

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. And suitable for use as a load switch or in PWM applications, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit**/ Pinning****/ Marking**

See Marking Instructions.

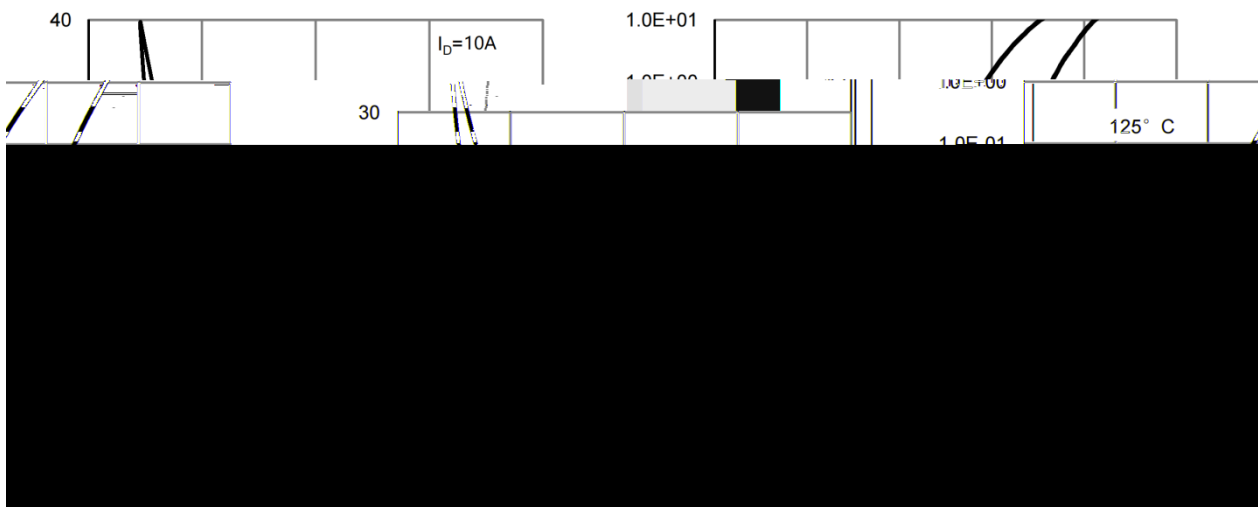
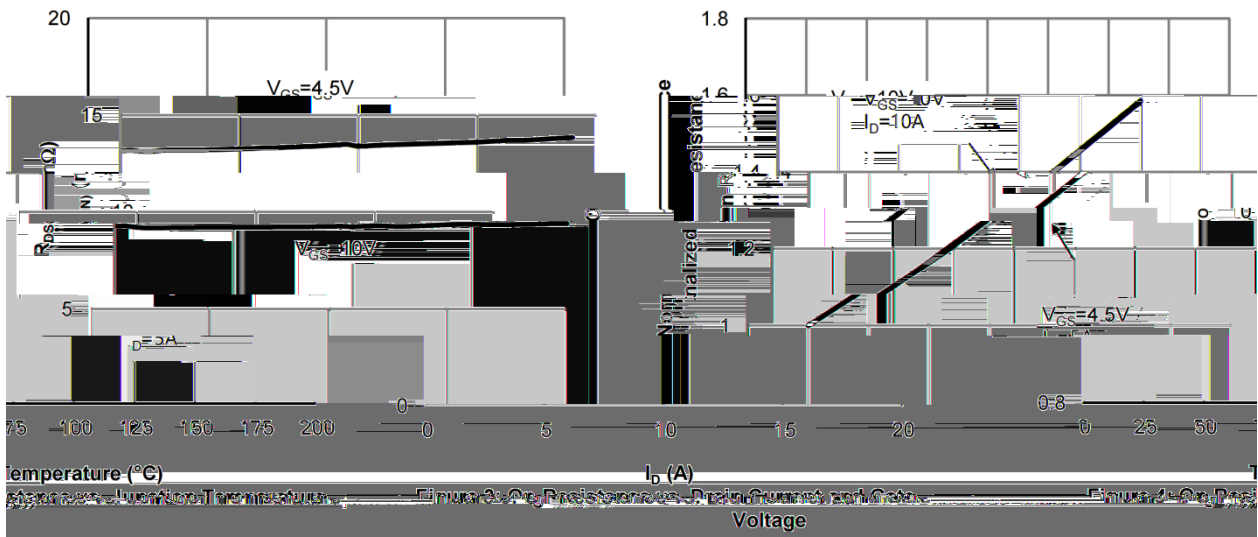
/ Absolute Maximum Ratings($T_a=25$)

Parameter	Symbol	Rating		Unit
		N-channe	P-channell	
Drain-Source Voltage	V _{DSS}	±30		V
Gate-Source Voltage	V _{GSS}	±20		V
Continuous Drain Current	I _D (T _C =25)	39.5	-39	A
Pulsed Drain Current	I _{DM}	125	-125	A
Avalanche Current(L=0.5mH)	I _{AS}	17	13	A
Avalanche energy(L=0.5mH)	E _{AS}	115	67	mJ
Power Dissipation	P _D (T _C =25)	25	25	W
Junction and Storage Temperature Range	T _J ,T _{STG}	-55 to +150		
Maximum Junction-to-Ambient	R _{ΘJA}	65		/W
Maximum Junction-to-Case	R _{ΘJC}	5		

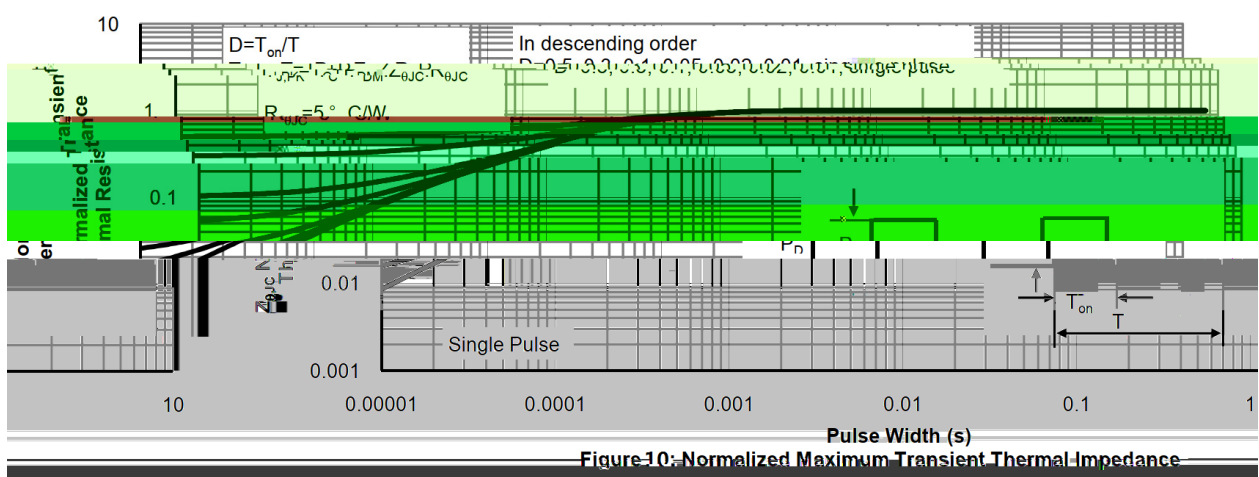
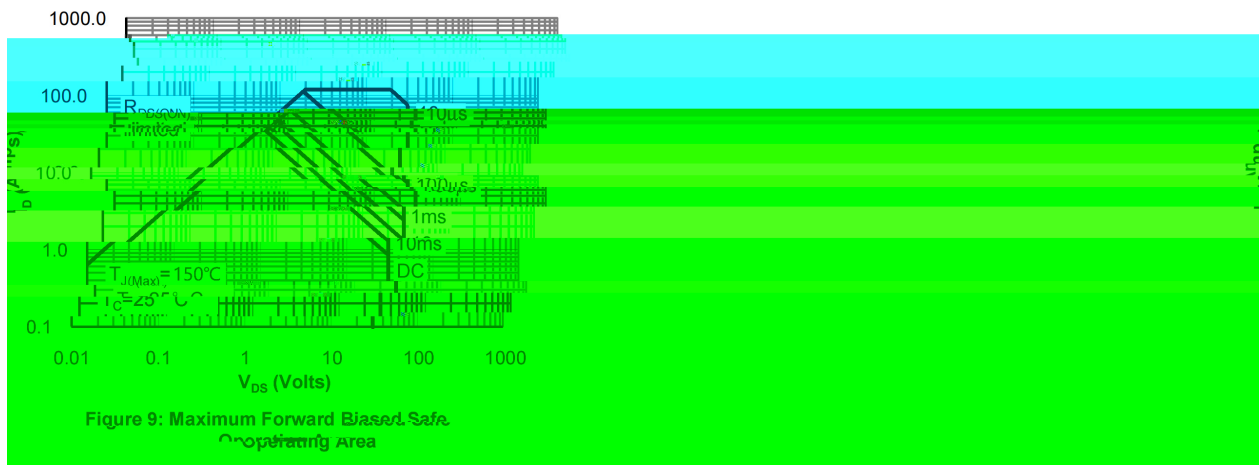
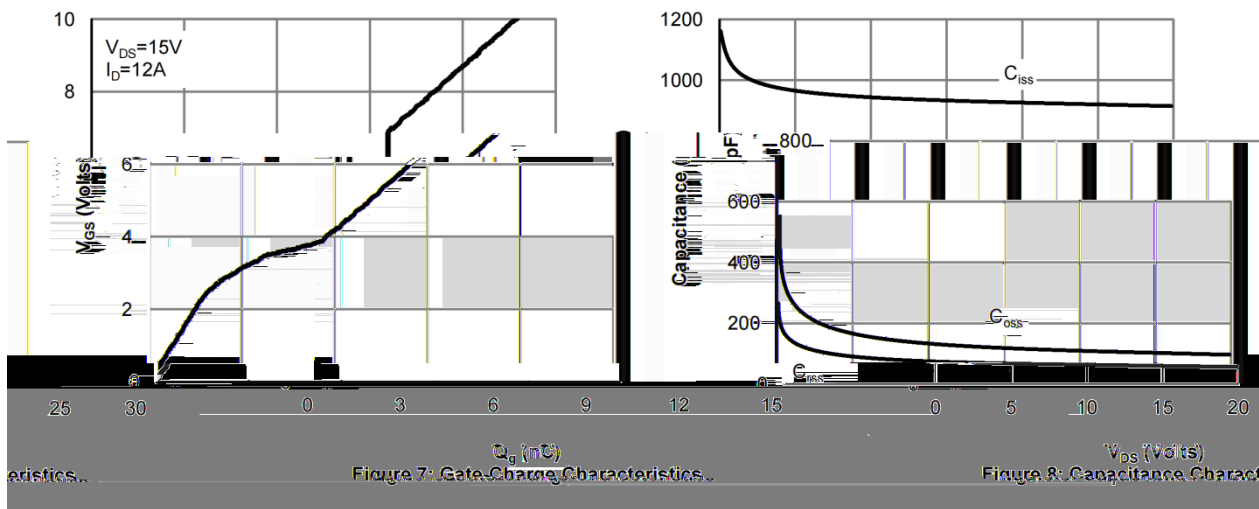
/N-CHANNEL Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	30	35		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$			1.0	μA
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.0	1.6	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=10A$		8	10	m Ω
		$V_{GS}=4.5V$ $I_D=5A$		12	15	m Ω
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1.0A$			1.2	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		930		pF
Output Capacitance	C_{oss}			100		pF
Reverse Transfer Capacitance	C_{rss}			70		pF
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		2.8		Ω
Total Gate Charge(10V)	Q_g	$V_{GS}=10V$ $V_{DS}=15V$ $I_D=12A$		14		nC
Total Gate Charge(4.5V)				6.5		nC
Gate-Source Charge	Q_{gs}			2.3		nC
Gate-Drain Charge	Q_{gd}			3		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=1.25\Omega$ $R_{GEN}=3\Omega$		4.5		ns
Turn-On Rise Time	t_r			10		ns
Turn-Off Delay Time	$t_{d(off)}$			15		ns
Turn-Off Fall Time	t_f			6		ns

/ N-CHANNEL Electrical Characteristic Curve



/ N-CHANNEL Electrical Characteristic Curve



/P-CHANNEL Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-30	-37		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V V _{GS} =0V			-1.0	μA
Gate-Body leakage current	I _{GSS}	V _{GS} =±20V V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =-250μA	-1.0	-1.7	-2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V I _D =-10A		10	12	mΩ
		V _{GS} =-4.5V I _D =-5A		16	20	mΩ
Diode Forward Voltage	V _{SD}	V _{GS} =0V I _S =-1.0A			-1.2	V
Input Capacitance	C _{iss}	V _{DS} =-25V V _{GS} =0V f=1.0MHz		3350		pF
Output Capacitance	C _{oss}			2400		pF
Reverse Transfer Capacitance	C _{rss}			1050		pF
Gate resistance	R _g	V _{DS} =0V V _{GS} =0V f=1.0MHz		6.8		Ω
Total Gate Charge(10V)	Q _g	V _{GS} =-10V V _{DS} =-15V I _D =-16A		36		nC
Total Gate Charge(4.5V)				16		nC
Gate-Source Charge	Q _{gs}			5.5		nC
Gate-Drain Charge	Q _{gd}			9		nC
Turn-On Delay Time	t _{d(on)}	V _{DS} =-15 V V _{GS} =-10V R _L =0.9Ω R _{GEN} =3Ω		11		ns
Turn-On Rise Time	t _r			7.4		ns
Turn-Off Delay Time	t _{d(off)}			44		ns
Turn-Off Fall Time	t _f			18		ns

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/ P-CHANNEL Electrical Characteristic Curve

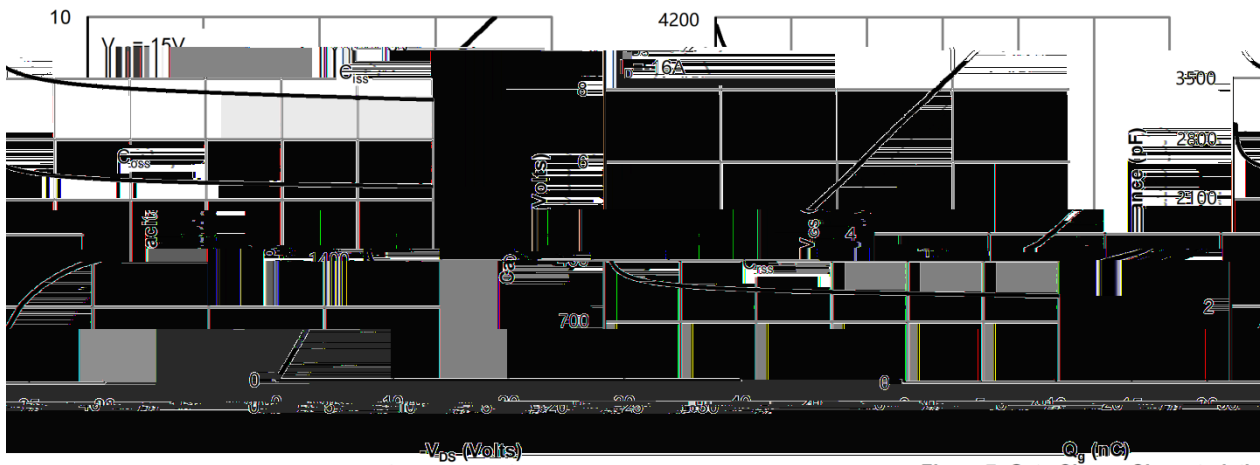


Figure 6: Capacitance Characteristics

Figure 7: Gate-Charge Characteristic

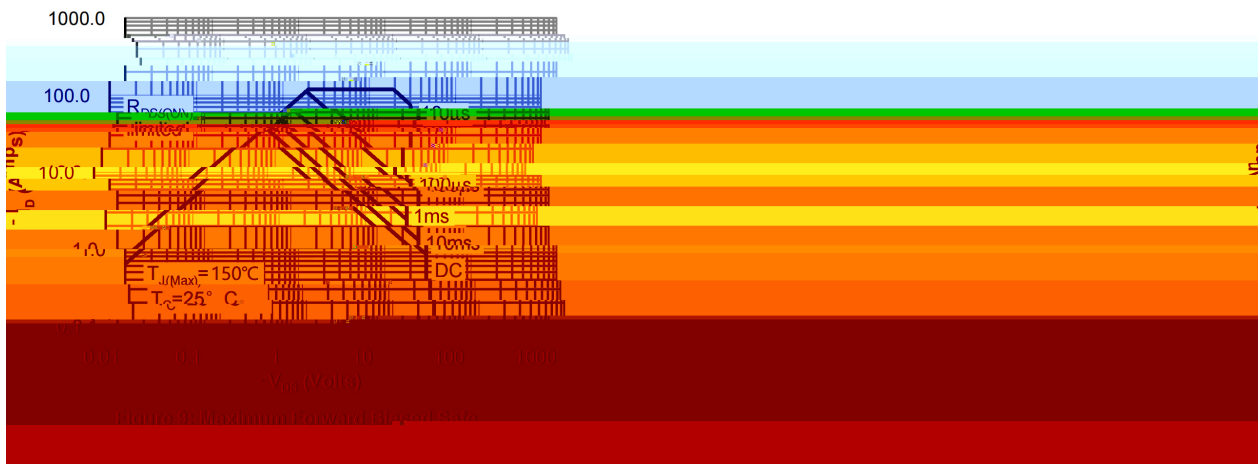


Figure 8: Maximum Forward Biased Output Characteristics

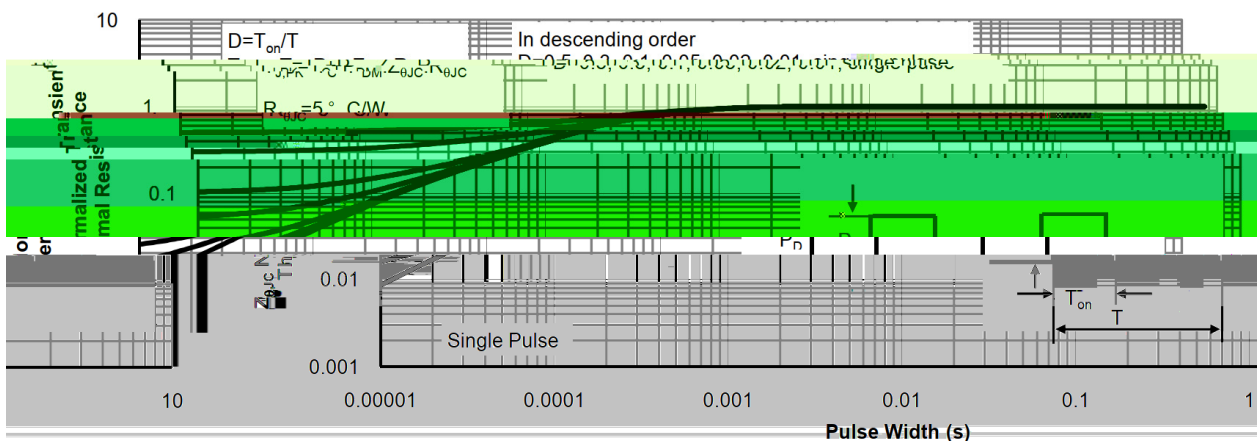
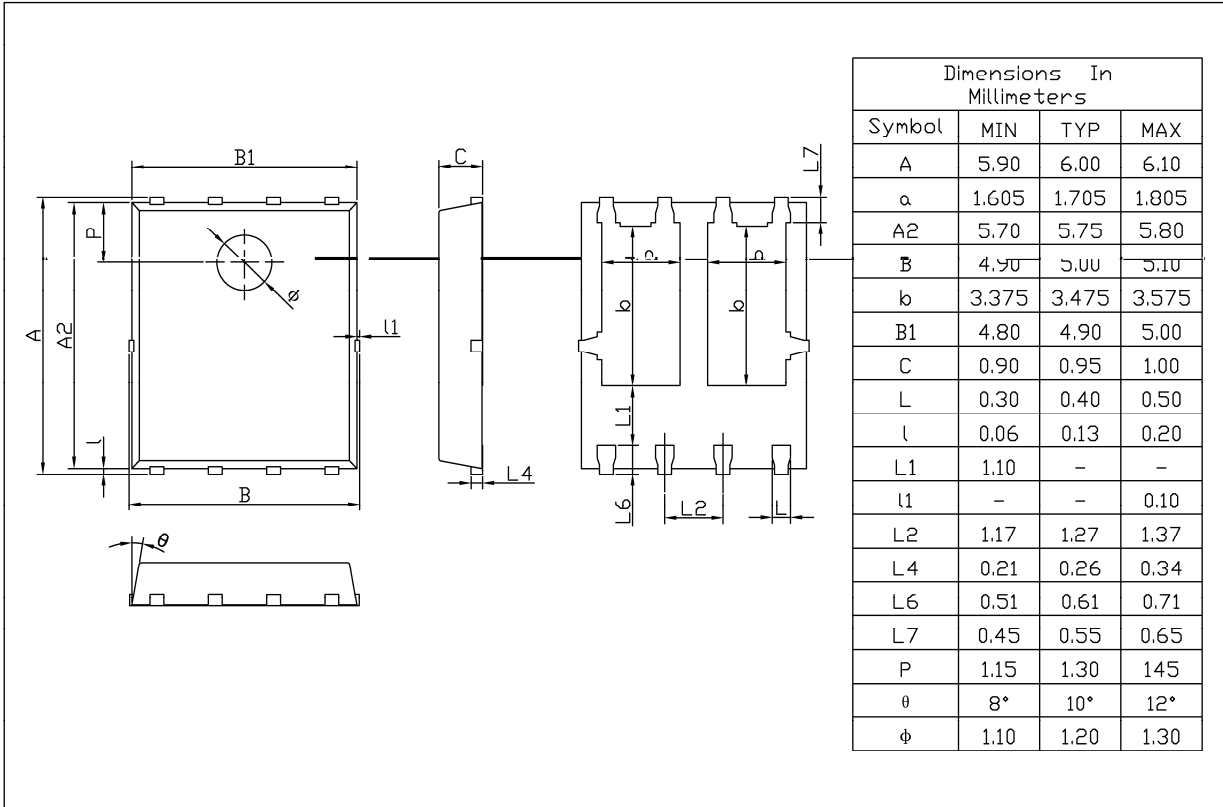


Figure 10: Normalized Maximum Transient Thermal Impedance

I Package Dimensions

PDFN5 X6A Unit:mm



Rev.01 202209

/ Marking Instructions



BR	
Q	
080C03	

Note	
BR	Company Code
Q:	Automobile halogen-free product Code
080C03	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 ³)		
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box
PDFN5×6A	5,000	2	10,000	6	60,000	13"×12	360×360×50	380×335×366