STC5853

P-Channel Enhancement Mode MOSFET with Schottky Diode

DESCRIPTION

The STC5853 is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density. advanced trench technology to provide excellent $R_{DS(ON)}$.
This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application , and low in-line power loss are needed in a very small outline surface mount package.

FEATURE

MOSFET

- ***-20V/-3.5A, $R_{DS(ON)}$ =70mΩ@V_{GS} =-4.5V***
- ***-20V/-2.4A, $R_{DS(ON)}$ =95mΩ@V_{GS} =-2.5V***
- ***-20V/-1.8A, $R_{DS(ON)}$ =125mΩ@V_{GS} =-1.8V***

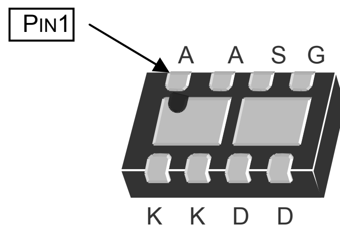
SCHOTTKY

- ***V_{KA} = 20V, V_F=0.43V(Typ.)@ I_F = 1A***
- Full RoHS compliance
- DFN3X2-8L package design

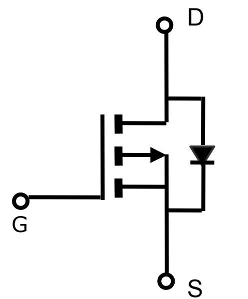
APPLICATIONS

- Battery Powered System
- Notebook Power Management
- Cell Phone

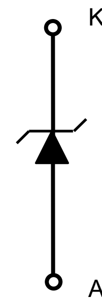
PIN CONFIGURATION



TOP VIEW
DFN3X2-8L

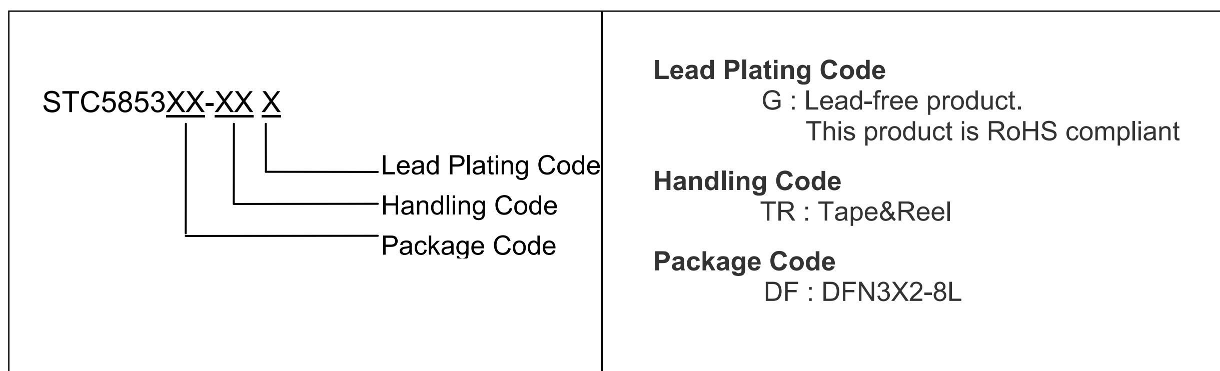


P-Channel Mosfet



Schottky Diode

PART NUMBER INFORMATION



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ORDERING INFORMATION

Part Number	Package Code	Package	Shipping
STC5853DF-TRG	DF	DFN3X2-8L	3000 /Tape&Reel

※ Year Code : 0 ~ 9
※ Week Code : A ~ Z(1~26) ; a ~ z(27~52)
※ DFN3X2-8L : Only available in tape and reel packaging. (A reel contains 3000 devices)
※ G : Lead-free product. This product is RoHS compliant

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless otherwise noted)

Symbol	Parameter		Typical	Unit
P-Channel MOSFET				
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current (T_J=150°C)	T_A=25°C T_A=70°C	-3.5 -2.8	A
I_{DM}	Pulsed Drain Current		-15	A
I_S	Continuous Source Current (Diode Conduction)		-1.4	A
T_J	Operation Junction Temperature		-55~150	°C
T_{STG}	Storage Temperature Range		-55~150	W
P_D	Power Dissipation	T_A=25°C T_A=70°C	1.25 0.8	W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	T ≤ 10sec Steady State	65 95	°C/W
Schottky				
V_{KA}	Reverse Voltage		20	V
I_F	Continuous Drain Current	T_A=25°C T_A=70°C	1 0.7	A
I_{FM}	Pulsed Drain Current		10	A
P_D	Power Dissipation	T_A=25°C T_A=70°C	0.9 0.6	W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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ELECTRICAL CHARACTERISTICS(T_A = 25℃ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
MOSFET Dynamic Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} =0V,I_D =250μA	-20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS},I_D =-250μA	-0.4		-0.9	V
I_{GSS}	Gate Leakage Current	V_{DS} =0V,V_{GS}=±12V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =-20V,V_{GS} =0V			-1	μA
		V_{DS} =-20V,V_{GS} =0V T_J =55℃			-5	
$R_{DS(ON)}$	Drain-source On-Resistance	V_{GS} =-4.5V,I_D=-3.5A V_{GS} =-2.5V, I_D=-2.4A V_{GS} =-1.8V, I_D=-1.8A		70 95 125	80 110 140	mΩ
G_{fs}	Forward Transconductance	V_{DS} =-5V,I_D =-2.8A		6		S
MOSFET Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS} =-6V,V_{GS} =-4.5V I_D =-2.8A		4.8	8	nC
Q_{gs}	Gate-Source Charge			1.0		
Q_{gd}	Gate-Drain Charge			1.0		
C_{iss}	Input Capacitance	V_{DS} =-6V,V_{GS} =0V f =1MHz		485		pF
C_{oss}	Output Capacitance			85		
C_{rss}	Reverse Transfer Capacitance			40		
$t_{d(on)}$	Turn-On Time	V_{DD} =-6V,R_L =6Ω I_D =-1.0A,V_{GEN} =-4.5V R_G =6Ω		10	16	nS
t_r				13	23	
$t_{d(off)}$	Turn-Off Time			18	25	
t_f				15	20	

ELECTRICAL CHARACTERISTICS(T_A = 25℃ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Schottky Parameters						
V_F	Forward Voltage Drop	I_F =1A		0.43	0.47	V
V_{BR}	Reverse Breakdown Voltage	I_R =500μA	20			V
I_{rm}	Maximum reverse leakage current	V_R =23V V_R =23V , T_J=70℃			0.1 1	mA
C_T	Junction Capacitance	V_R = 10V V_R =0V , f=1MHz		31 120		pF
T_{rr}	SchottkyReverse Recovery Time	I_F =1A, dI/d_t =100A/μs		5.4	10	nS
Q_{rr}	Schottky Reverse Recovery Charge	I_F =1A, dI/d_t =100A/μs		0.8		nC

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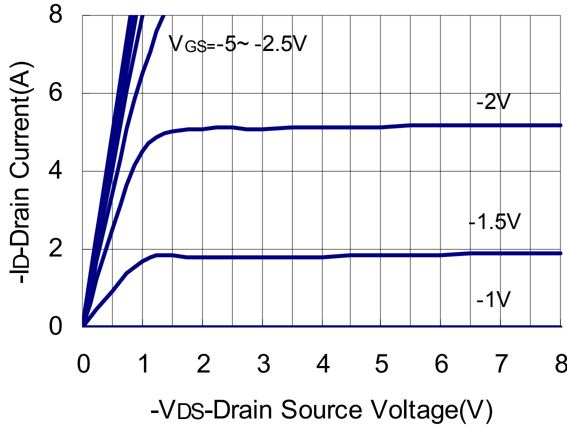
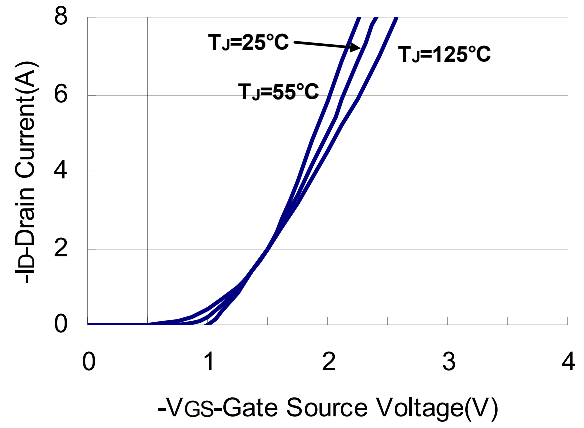
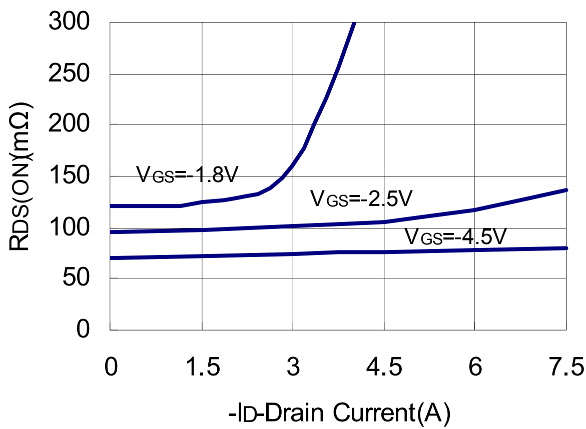
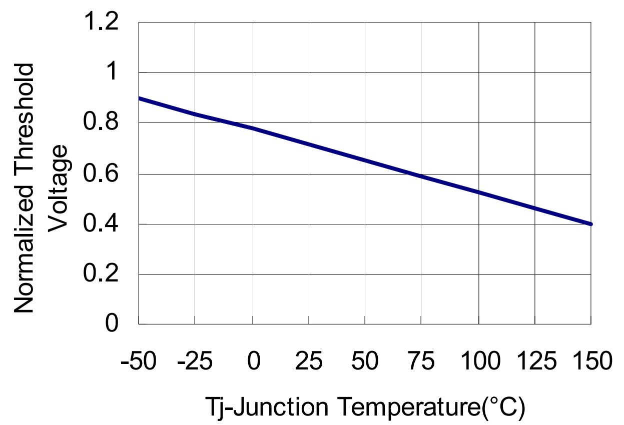
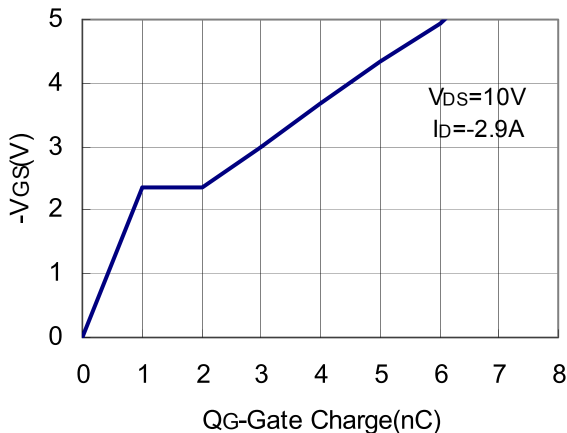
TYPICAL CHARACTERISTICS (MOSFET)

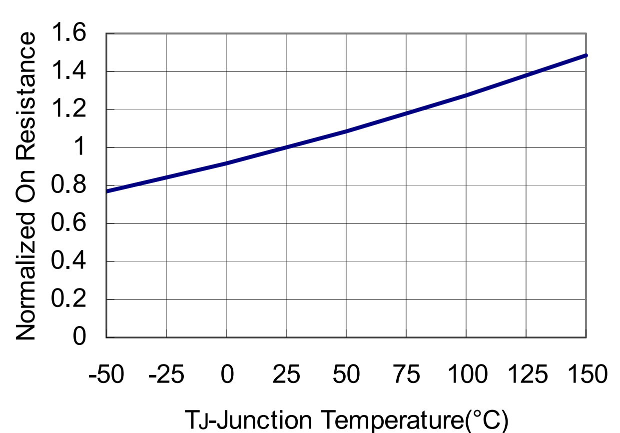












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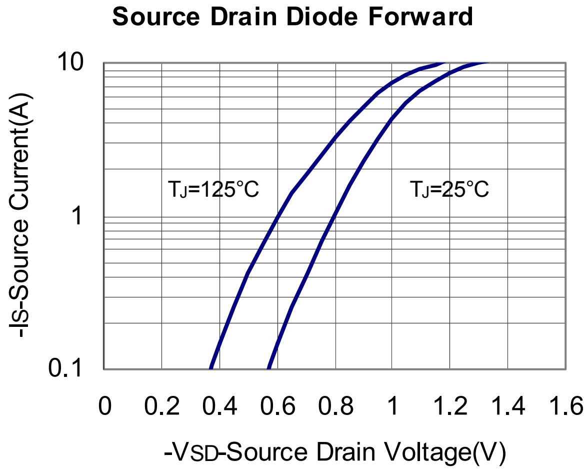
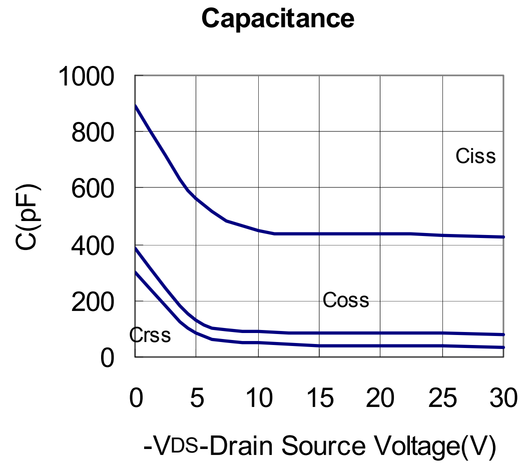
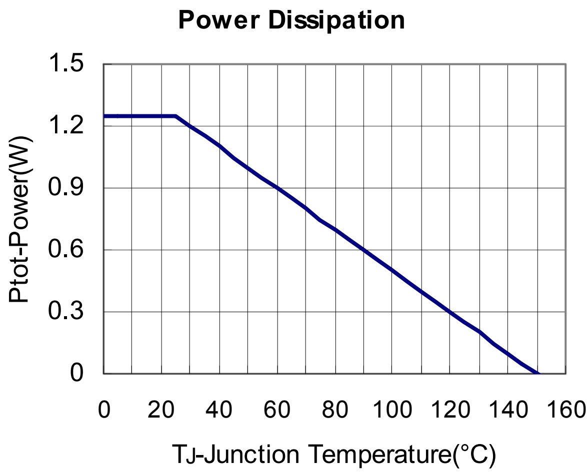
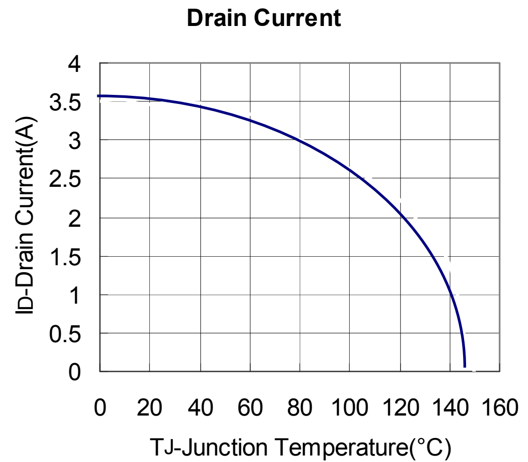
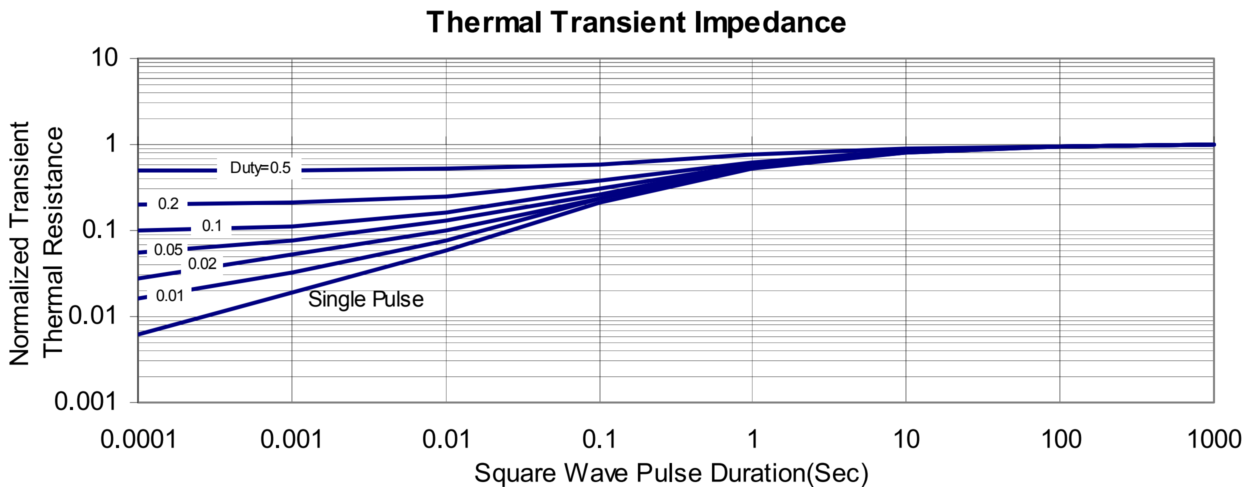
TYPICAL CHARACTERISTICS *(MOSFET)*











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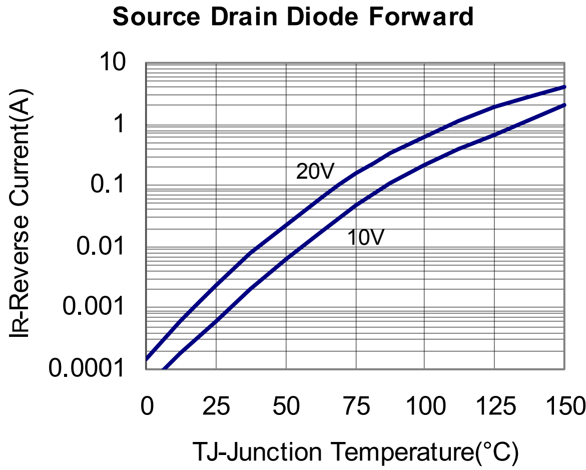
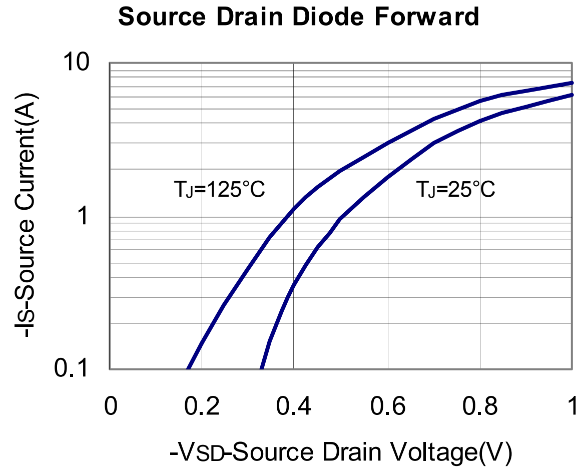
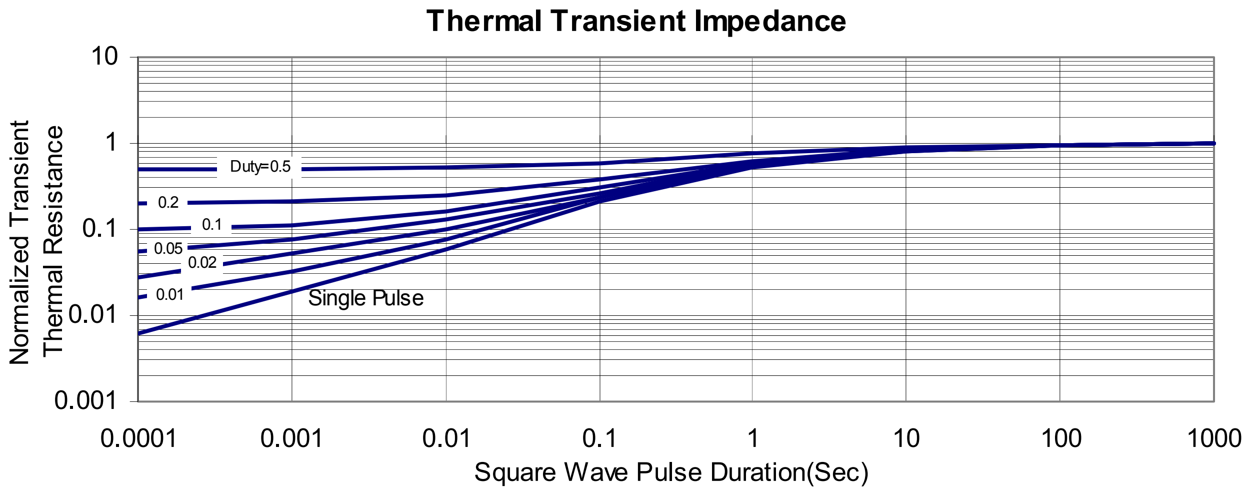
TYPICAL CHARACTERISTICS (Schottky)







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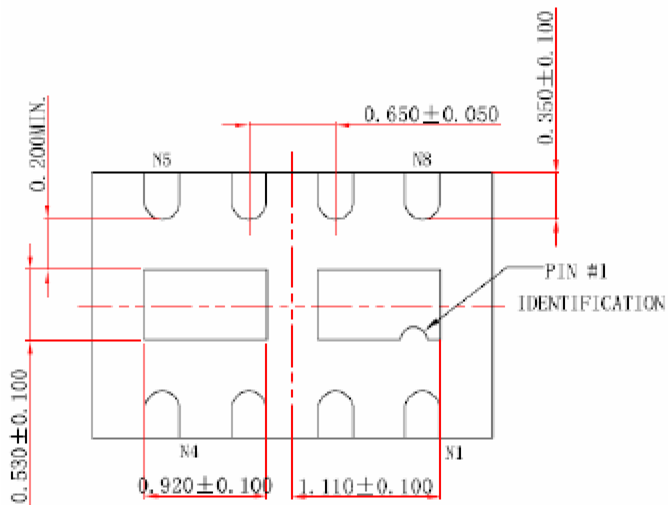
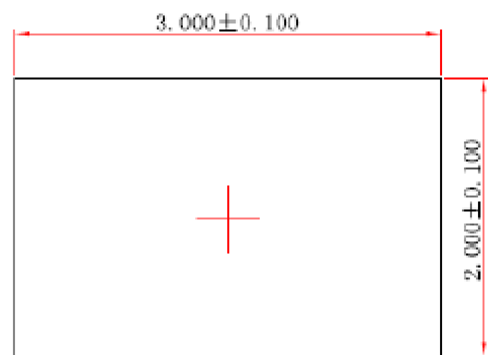
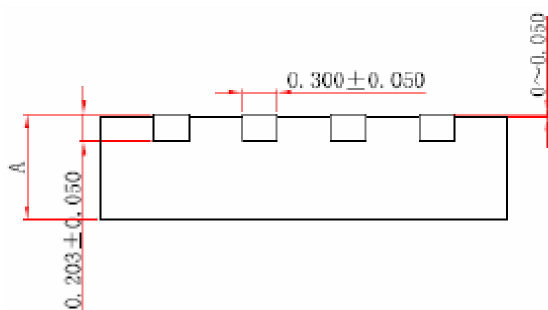
■DFN3x2-8L PACKAGE DIMENSIONS







	MIN.	MORM.	MAX.
A	0.700	0.750	0.800
	0.800	0.850	0.900

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