

WPM2005B

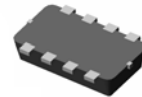
Power MOSFET and Schottky Diode

Features

- Featuring a MOSFET and Schottky Diode
- Independent Pinout to each Device to Ease Circuit Design
- Ultra Low V_F Schottky

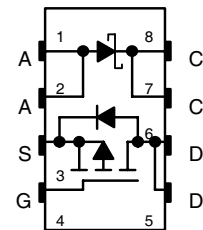
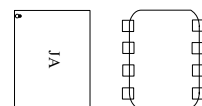
Applications

- Li-Ion Battery Charging
- High Side DC-DC Conversion Circuits
- High Side Drive for Small Brushless DC Motors
- Power Management in Portable, Battery Powered Products

DFN3*2-8L


MOSFET MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	-2.7	A
Drain Current-Pulsed	I_{DM}	-10	A
Power Dissipation	P_D	1.1	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	110	$^\circ\text{C}/\text{W}$

pin connections:

Marking:


J = Specific Device Code
A = Date Code

SCHOTTKY DIODE MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limits	Unit
Peak repetitive reverse voltage	V_{RRM}	20	V
DC Blocking voltage	V_R	20	V
Average rectified forward current	I_F	1	A

Order information

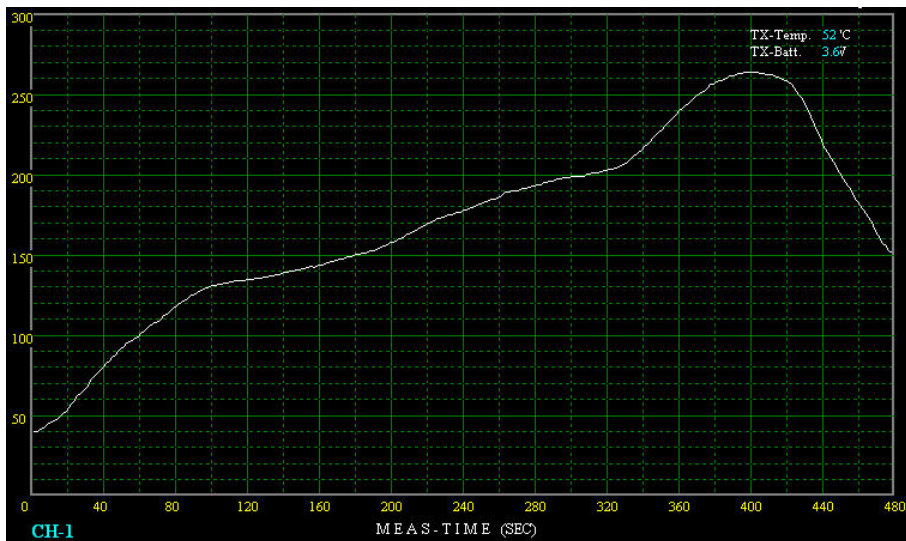
Part Number	Package	Shipping
WPM2005B-8/TR	DFN3*2- 8L	3000 Tape & Reel

MOSFET ELECTRICAL CHARACTERISTICS(Tamb=25°C unless otherwise specified)

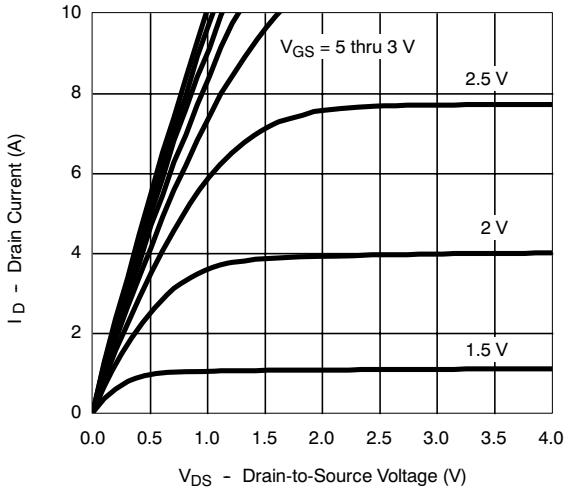
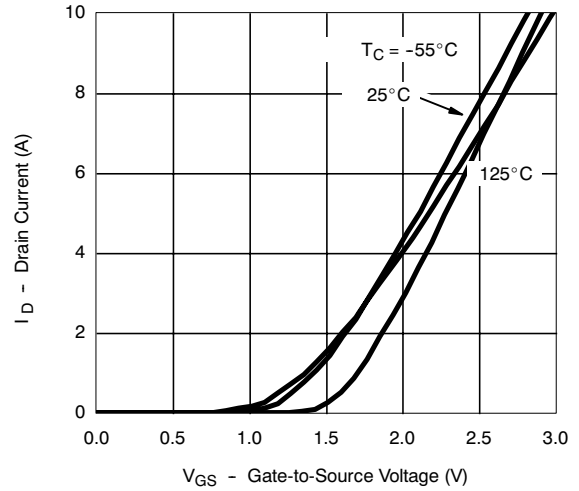
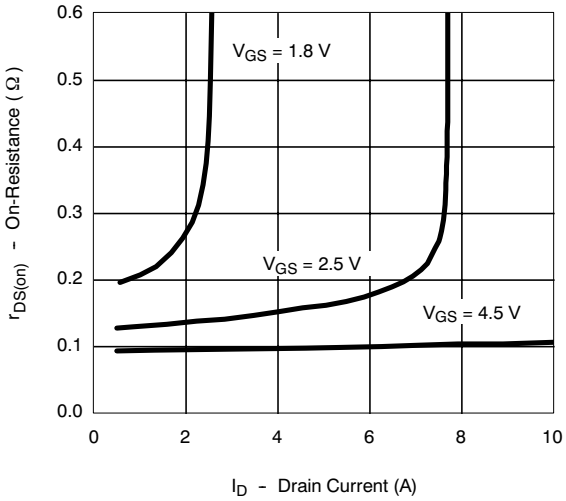
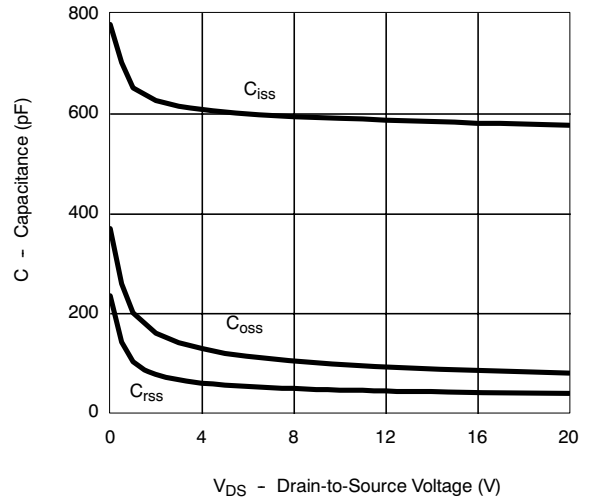
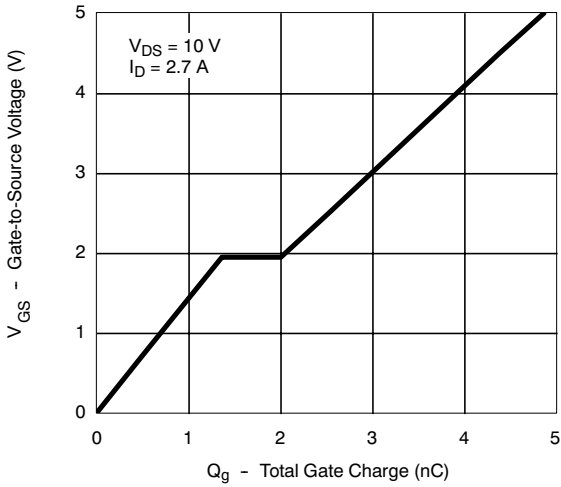
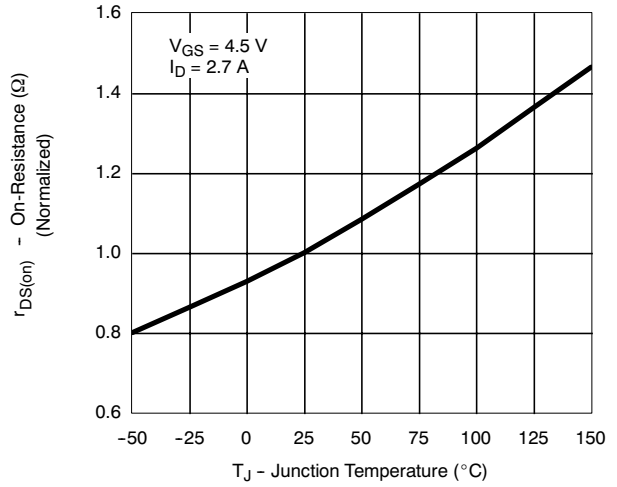
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16V, V _{GS} = 0V			-1	μA
Gate -Source leakage current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = -250μA	-0.45			V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -2.7A			110	mΩ
		V _{GS} = -2.5V, I _D = -2.2A			160	mΩ
Forward Transconductance	g _{FS}	V _{DS} = -10V, I _D = -2.7A		7.0		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1.0 MHz			300	pF
Output Capacitance	C _{oss}				150	pF
Reverse Transfer Capacitance	C _{rss}				50	pF
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{GS} = -4.5V, V _{DD} = -10V, I _D = -1.0A, R _G = 6.0Ω,			25	ns
Turn-On Rise Time	t _r				45	ns
Turn-Off Delay Time	t _{d(off)}				45	ns
Turn-Off Fall Time	t _f				40	ns
Total Gate Charge	Q _{G(TOT)}	V _{DS} = -10V, I _D = -2.7A, V _{GS} = -4.5V		3.0	6.5	nC
Threshold gate charge	Q _{G(TH)}			0.2		nC
Gate-Source Charge	Q _{GS}			1.4		nC
Gate-Drain Charge	Q _{GD}			0.7		nC
Drain-Source Diode Characteristics and Maximum Ratings						
Forward Diode Voltage	V _{SD}	V _{GS} = 0V, I _S = -0.9A			-1.15	V

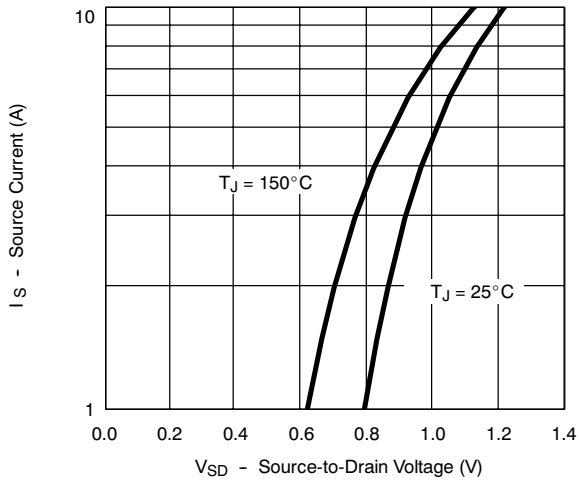
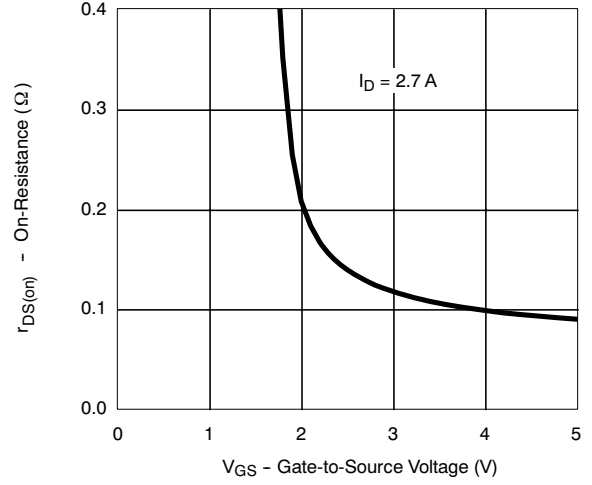
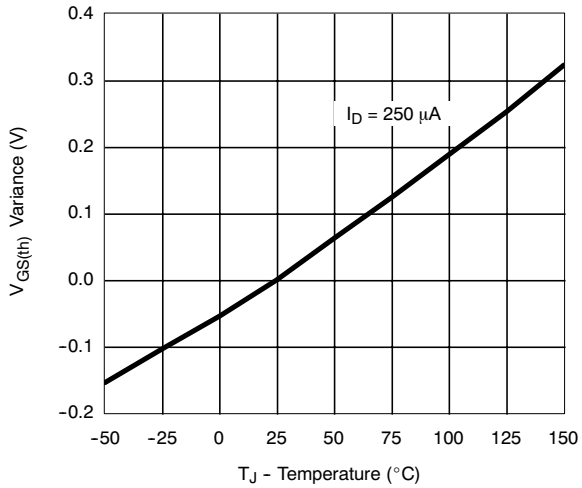
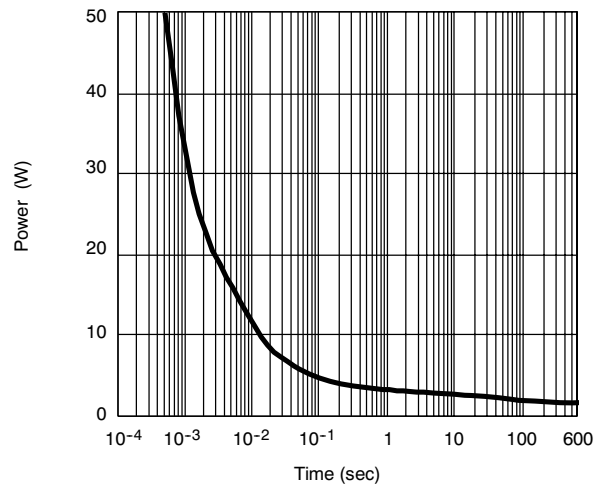
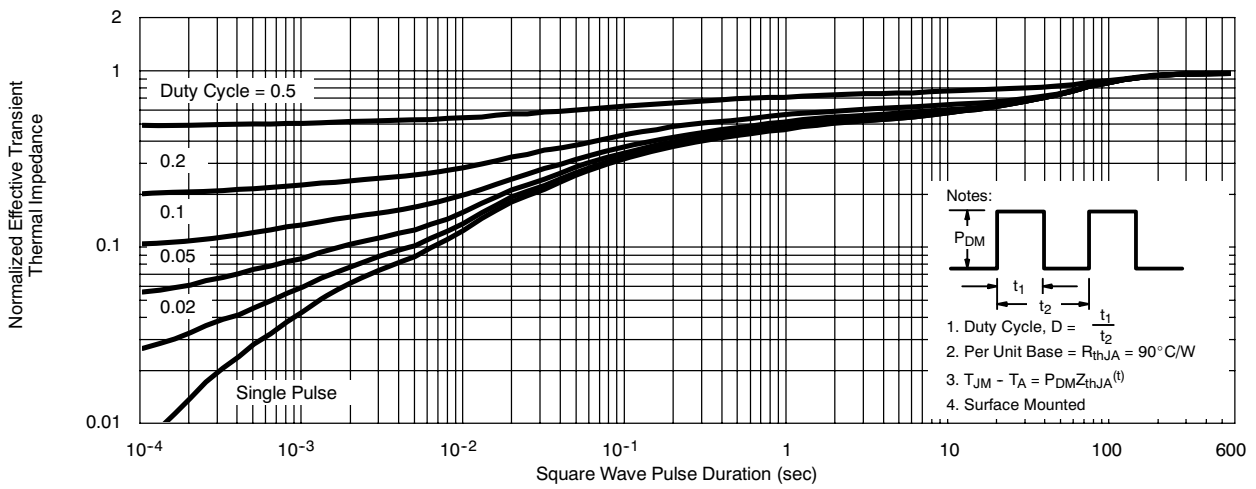
SCHOTTKY DIODE ELECTRICAL CHARACTERISTICS (T_J = 25° C unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V _{F1}		0.425		V	I _F = 0.1A
	V _{F2}		0.480			I _F = 0.5A
	V _{F3}			0.575		I _F = 1A
Reverse current	I _{R1}			5	μA	V _R = 10V
	I _{R2}			15	μA	V _R = 20V

Welding temperature curve

MSL=1

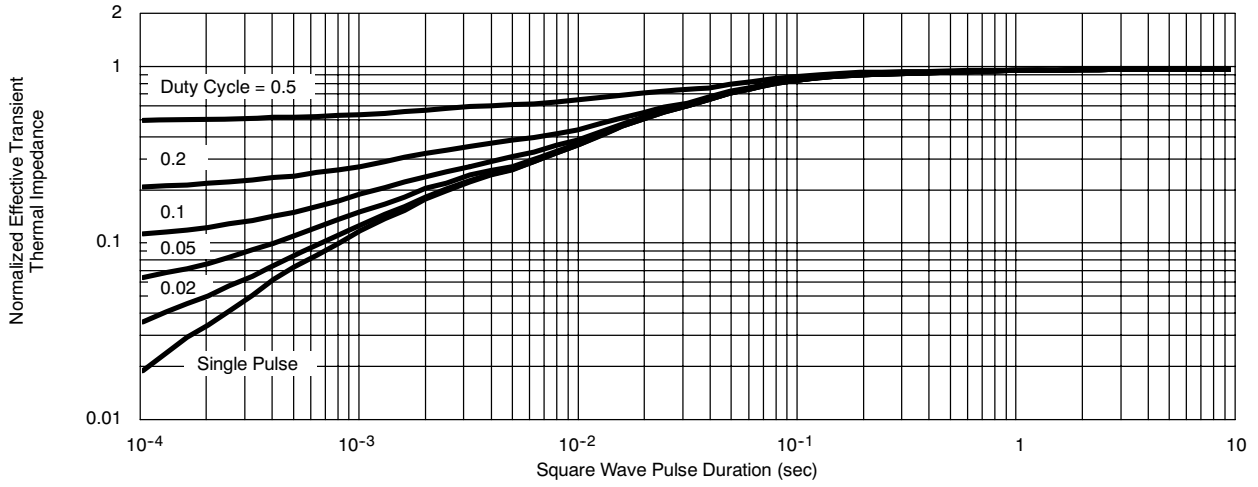
Typical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Output Characteristics

Transfer Characteristics

On-Resistance vs. Drain Current

Capacitance

Gate Charge

On-Resistance vs. Junction Temperature


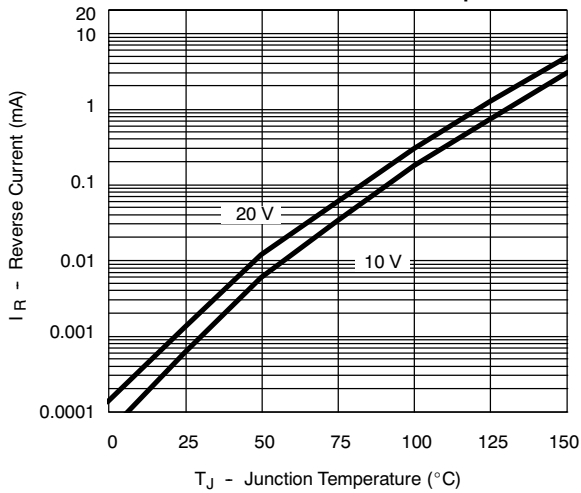
Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

Threshold Voltage

Single Pulse Power

Normalized Thermal Transient Impedance, Junction-to-Ambient




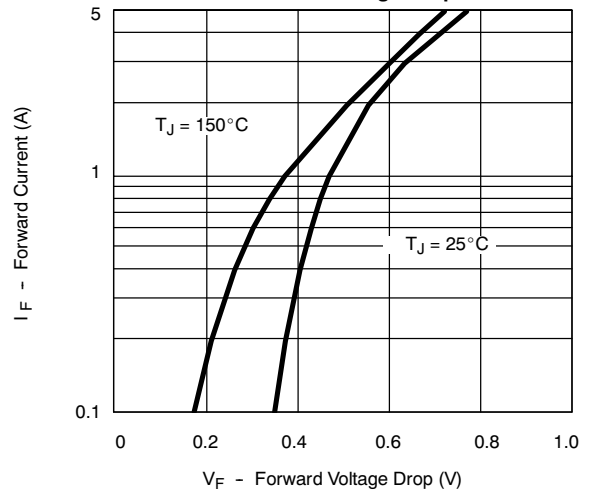
Normalized Thermal Transient Impedance, Junction-to-Foot



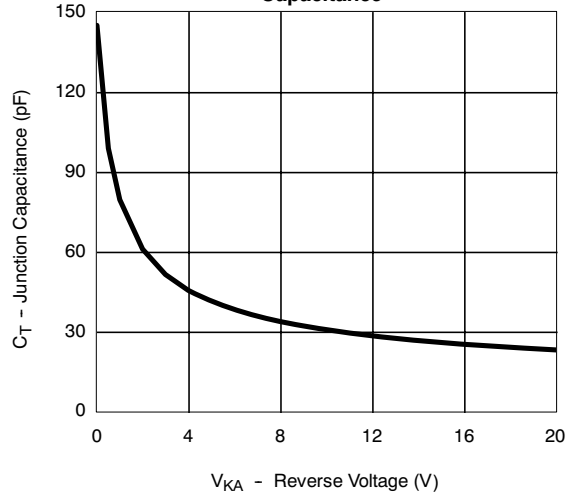
Reverse Current vs. Junction Temperature

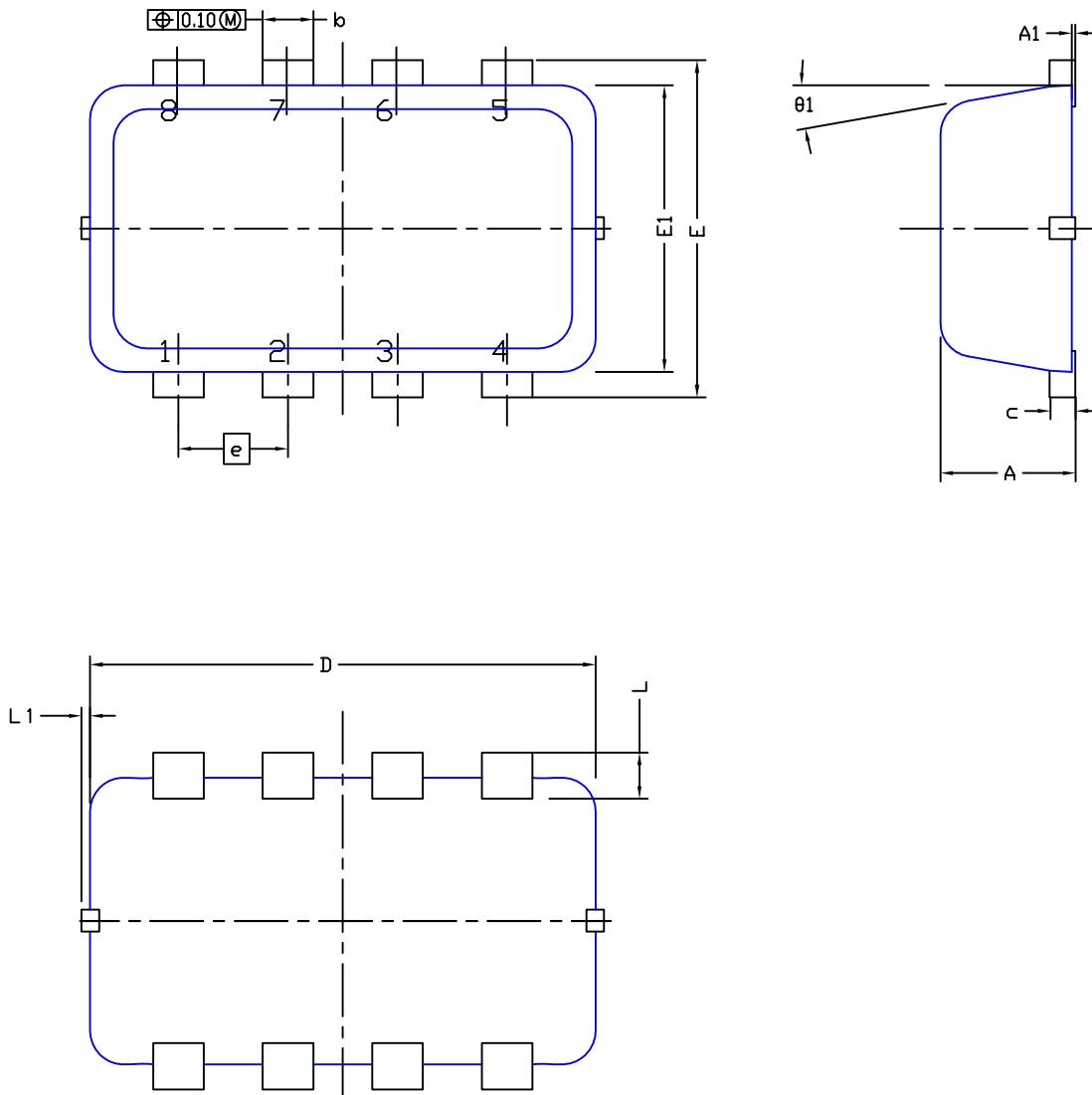


Forward Voltage Drop



Capacitance



DFNWB3X2-8L(P0.65T0.75/0.85) PACKAGE OUTLINE DIMENSIONS


DIM.	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.80	0.900	0.0276	0.0315	0.0354
A1	0.00	---	0.05	0.000	---	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.08	0.152	0.25	0.003	0.006	0.010
D	3.00 BSC			0.118 BSC		
E	2.00 BSC			0.079 BSC		
E1	1.70 BSC			0.067 BSC		
e	0.65 BSC			0.026 BSC		
L	0.20	0.275	0.400	0.008	0.011	0.0157
L1	0	---	0.100	0	---	0.004
theta1	0°	10°	12°	0°	10°	12°