Description

The PSMD2P10R2 uses split gate trench technology to provide excellent $R_{DS(ON)}$ low gate charge. This device is suitable for power management and high efficiency applications at high switching frequencies applications.

| MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
100	1.7@ V_{GS} = 10V	230

TO-263 (Top View)

Feature

➢ Low $R_{DS(ON)}$ - Ensures On-State Losses are Minimized

➢ Excellent Q_{gd} x $R_{DS(ON)}$ Product(FOM)

➢ Advanced Technology for DC-DC Converts

➢ Small Form Factor Thermally Efficient Package Enables Higher Density End Products

➢ 100% UIS (Avalanche) Rated

➢ Lead-Free Finish ; RoHS Compliant

➢ Halogen and Antimony Free. "Green" Device

Schematic diagram

D

G

S

S10R2E
YYWW

G(1) D(2) S(3)

Marking (Top View)

Applications

➢ PWM applications

➢ Load switch

➢ Power management

➢ DC-DC Converters

➢ Wireless Chargers

Absolute maximum rating@25℃

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous[1]	T_C=25℃	I_D	230	A
	T_C=100℃		145	
Pulsed Drain Current[2]		I_{DM}	920	A
Total Power Dissipation[3]		P_D	227.3	W
Avalanche Current[4]		I_{AS}	184	A
Avalanche Energy[4]		E_{AS}	1697	mJ
Thermal Resistance , Junction-case[5]		$R_{\theta JC}$	0.55	℃/W
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+175	℃
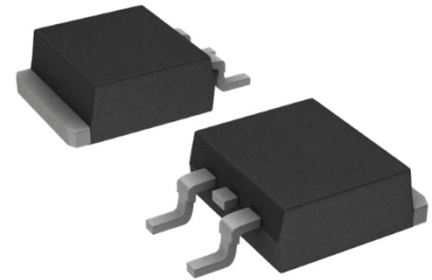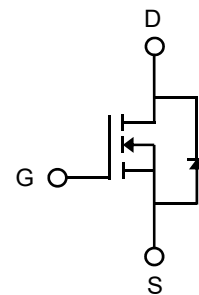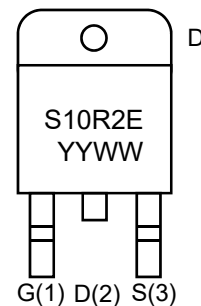
Electrical characteristics per line@25℃ (unless otherwise specified)

| Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$	-	-	1.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	2.7	4.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 20A$	-	1.7	2.4	mΩ
Dynamic Characteristics[5]						
Input Capacitance	C_{Iss}	$V_{DS} = 50V, V_{GS} = 0V,$ f = 1.0MHz	-	9465	-	pF
Output Capacitance	C_{oss}		-	2111	-	pF
Reverse Transfer Capacitance	C_{rss}		-	11	-	pF
Switching Characteristics[6]						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 50V, V_{GS} = 10V,$ $R_G = 10\Omega, I_D = 20A$	-	59	-	ns
Turn-on Rise Time	t_r		-	93	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	215	-	ns
Turn-Off Fall Time	t_f		-	153	-	ns
Total Gate Charge	Q_g	$V_{DS} = 50V, V_{GS} = 10V,$ $I_D = 20A$	-	146	-	nC
Gate-Source Charge	Q_{gs}		-	35	-	nC
Gate-Drain Charge	Q_{gd}		-	26	-	nC
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	-	2.5	-	Ω
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A$	-	0.67	1.3	V

Notes：
1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. Repetitive Rating: Pulse width limited by maximum junction temperature(T_{J_Max}=175℃).
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. This single-pulse measurement was taken under the following condition [L=100uH,V_{GS}=10V,V_{DS}=50V]while it's value is limited by T_{J_Max}=175℃
5. Device mounted on infinite heatsink
6. Guaranteed by design, not subject to production
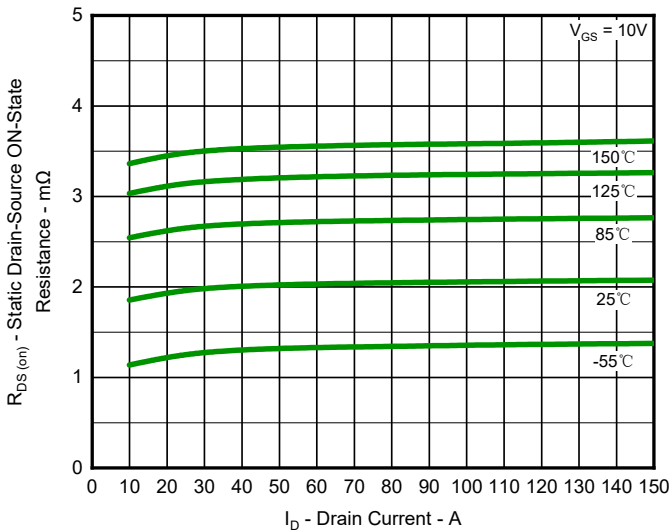
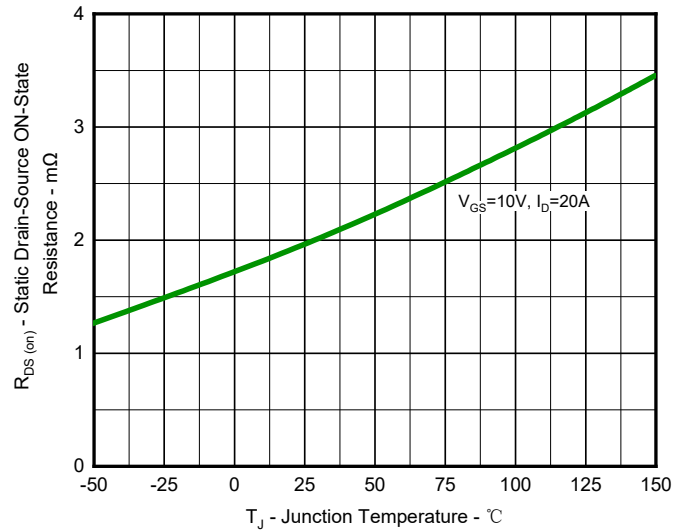## Typical Characteristics
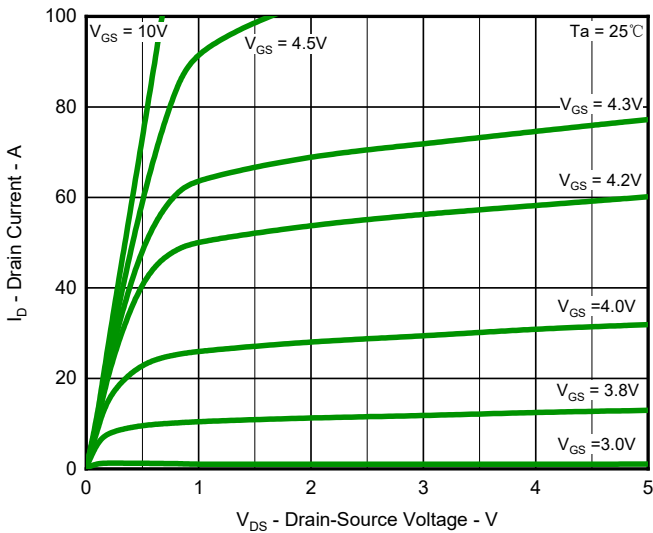
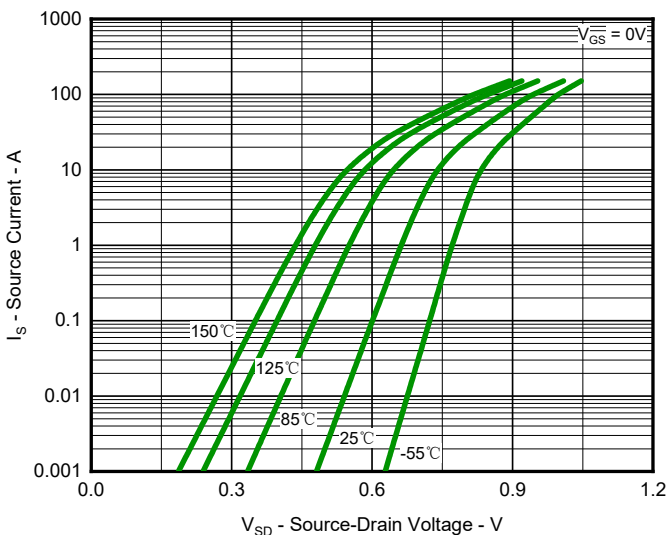**Fig.1 Output Characteristics**
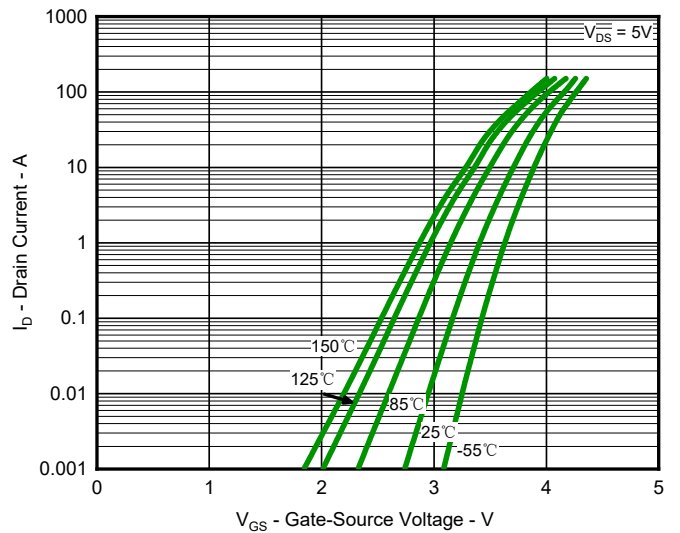
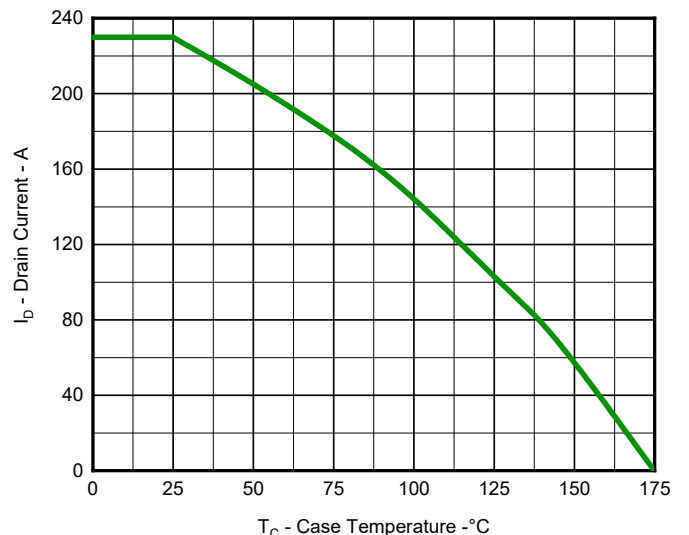

Fig.2 Typical Transfer Characteristic

Fig.3 Typical On-Resistance vs Drain Current and Temperature

Fig.4 On-Resistance Variation with Temperature

Fig.5 Diode Forward Voltage vs. Current

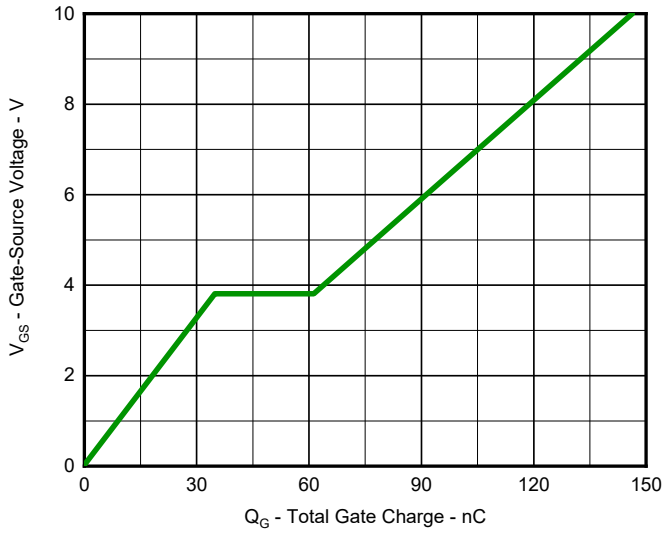**Fig.6 Maximun Drain Current vs. Case Temperature**
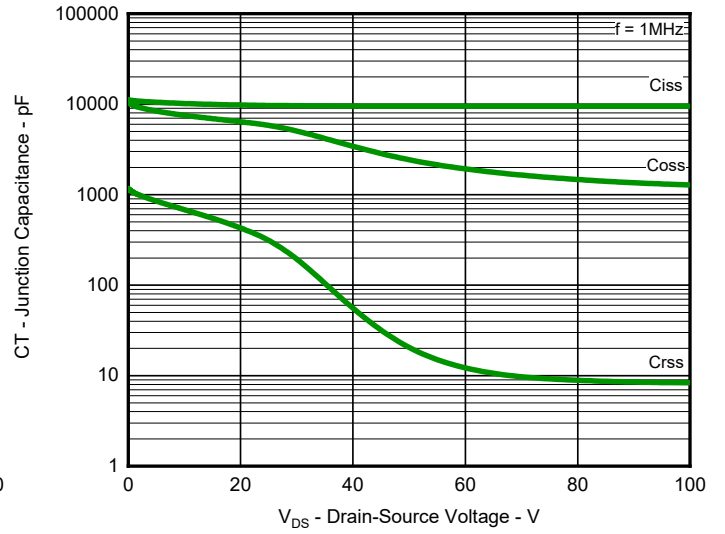
Fig.7 Gate Charge Characteristics
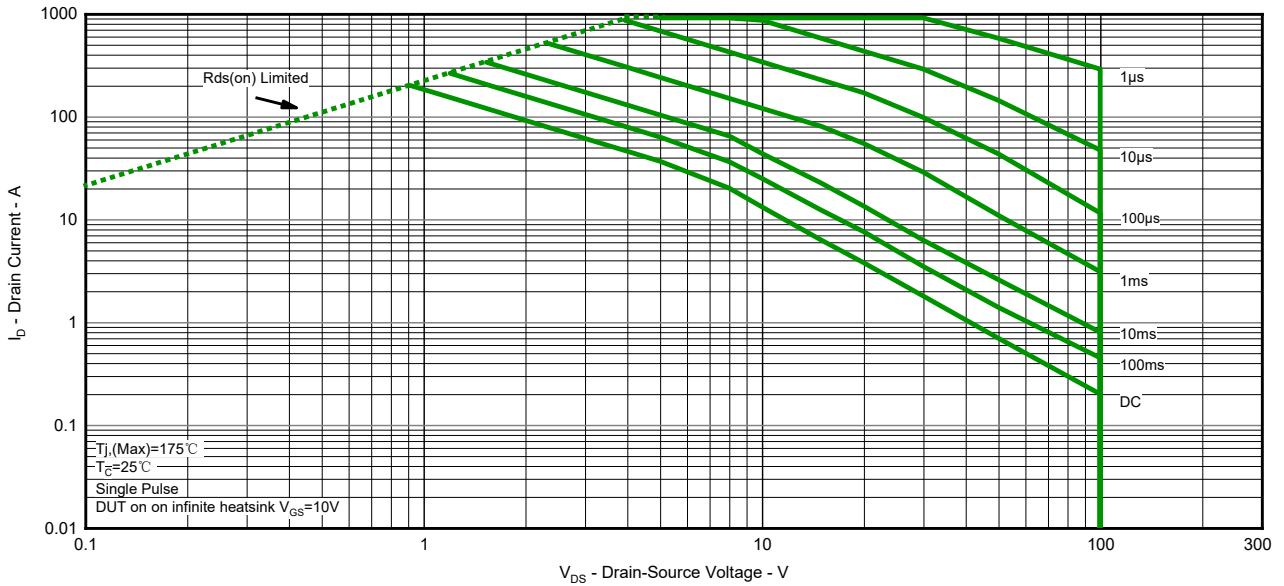

Fig.8 Typical Junction Capacitance

Fig.9 Safe Operation Area
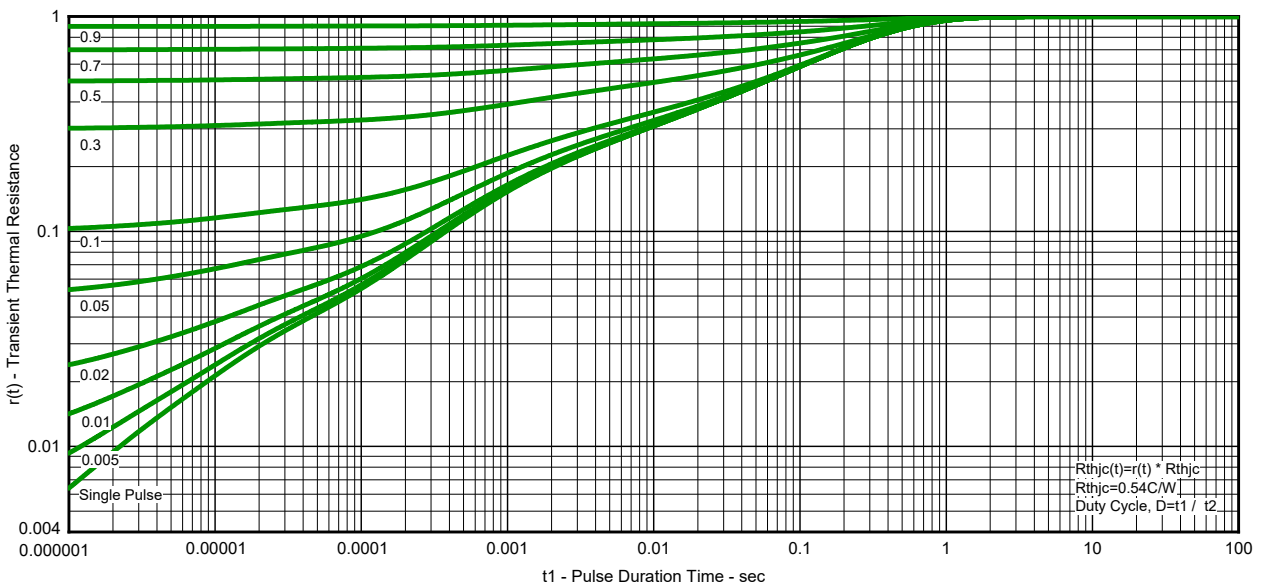
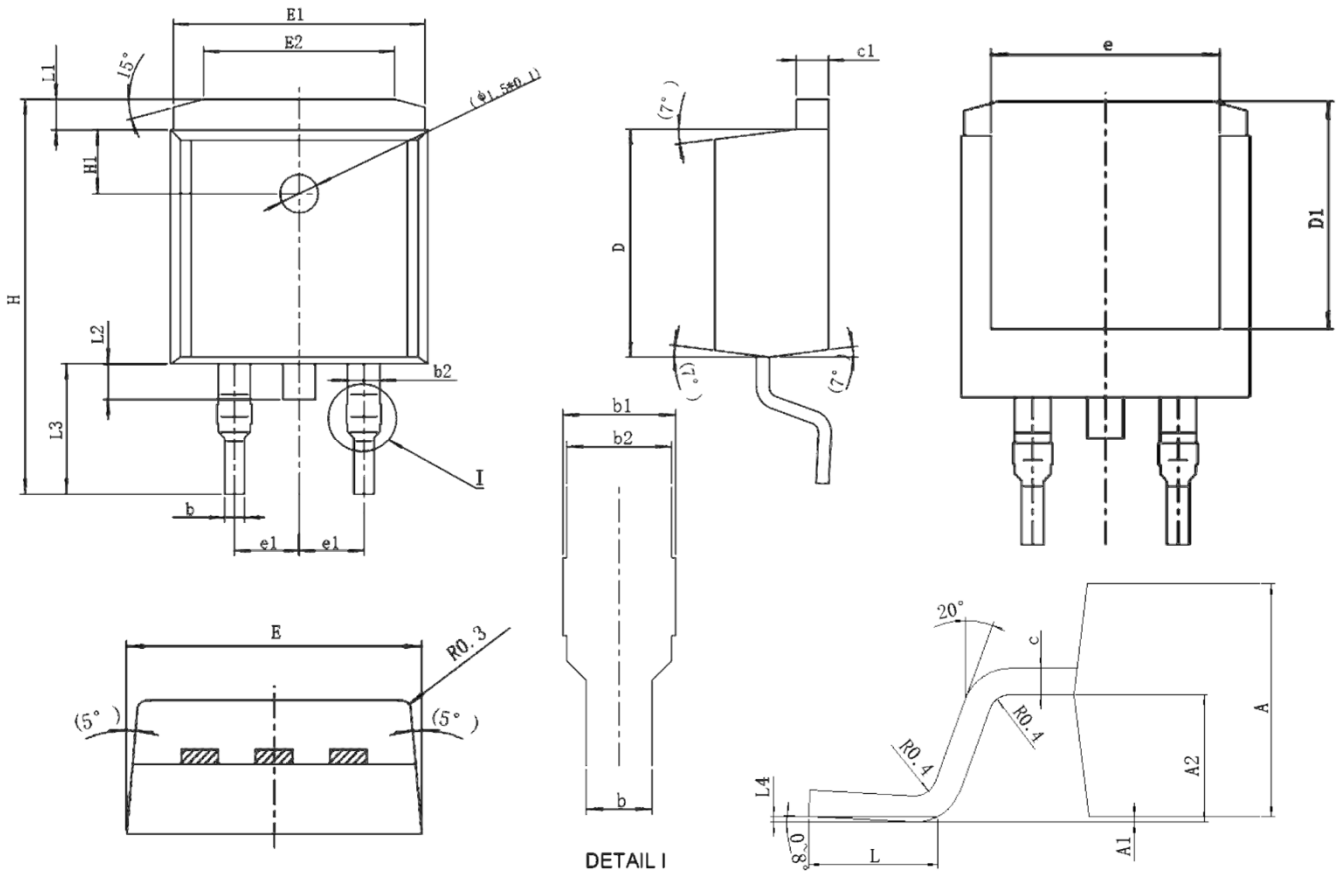**Fig.10 Transient Thermal Resistance**

Product dimension (TO-263)

DETAIL I

Dim	Millimeters		Inches		Dim	Millimeters		Inches	
	Min	**Max**	**Min**	**Max**		**Min**	**Max**	**Min**	**Max**
A	4.56	4.58	0.180	0.180	E1	9.85	9.91	0.388	0.390
A1	0.02	0.22	0.001	0.009	E2	7.40	7.60	0.291	0.299
A2	2.34	2.67	0.092	0.105	e	7.50	8.50	0.295	0.335
b	0.75	0.85	0.030	0.033	e1	2.53	2.55	0.100	0.100
b1	1.27	1.47	0.050	0.058	H	15.30	15.70	0.602	0.618
b2	1.22	1.32	0.048	0.052	H1	2.40	2.60	0.094	0.102
c	0.51	0.53	0.020	0.021	L	2.44	2.64	0.096	0.104
c1	1.29	1.32	0.051	0.052	L1	1.10	1.30	0.043	0.051
D	9.14	9.16	0.360	0.361	L2	1.20	1.70	0.047	0.067
D1	7.93	7.95	0.312	0.313	L3	5.14	5.16	0.202	0.203
E	10.00	10.20	0.394	0.402	L4	0.11	0.13	0.004	0.005

IMPORTANT NOTICE

Ⓟ and **Prisemi**® are registered trademarks of **Prisemi Electronics Co., Ltd (**Prisemi**),** Prisemi reserves the right to make changes without further notice to any products herein. Prisemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Prisemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in Prisemi data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Prisemi does not convey any license under its patent rights nor the rights of others. The products listed in this document are designed to be used with ordinary electronic equipment or devices, Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.