



SPP1015

P-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPP1015 is the P-Channel enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching , low in-line power loss, and resistance to transients are needed.

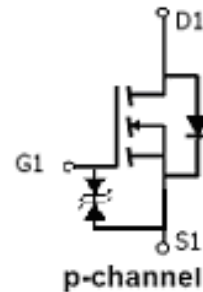
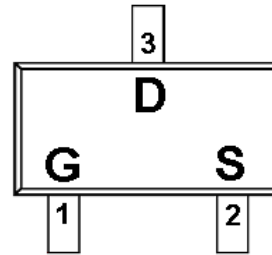
FEATURES

- ◆ P-Channel
 -20V/0.45A, $R_{DS(ON)} = 0.52\Omega @ V_{GS} = -4.5V$
 -20V/0.35A, $R_{DS(ON)} = 0.70\Omega @ V_{GS} = -2.5V$
 -20V/0.25A, $R_{DS(ON)} = 0.95\Omega @ V_{GS} = -1.8V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-523 (SC-89) package design

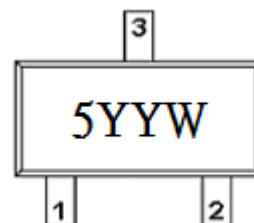
APPLICATIONS

- Drivers : Relays/Solenoids/Lamps/Hammers
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

PIN CONFIGURATION(SOT-523 / SC-89)



PART MARKING





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PIN DESCRIPTION

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1 | G | Gate |
| 2 | S | Source |
| 3 | D | Drain |

ORDERING INFORMATION

| Part Number | Package | Part Marking |
|---------------|---------|--------------|
| SPP1015S52RG | SOT-523 | 5Y |
| SPP1015S52RGB | SOT-523 | 5Y |

- ※ SPP1015S52RG : Tape Reel ; Pb – Free
- ※ SPP1015S52RGB : Tape Reel ; Pb – Free, Halogen – Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

| Parameter | Symbol | Typical | Unit |
|---|------------------|---------|-------|
| Drain-Source Voltage | V _{DSS} | -20 | V |
| Gate –Source Voltage | V _{GSS} | ±12 | V |
| Continuous Drain Current(T _J =150°C) | I _D | TA=25°C | -0.45 |
| | | TA=80°C | -0.35 |
| Pulsed Drain Current | I _{DM} | -1.0 | A |
| Continuous Source Current(Diode Conduction) | I _S | -0.3 | A |
| Power Dissipation | P _D | TA=25°C | 0.27 |
| | | TA=70°C | 0.16 |
| Operating Junction Temperature | T _J | -55/150 | °C |
| Storage Temperature Range | T _{STG} | -55/150 | °C |



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ELECTRICAL CHARACTERISTICS

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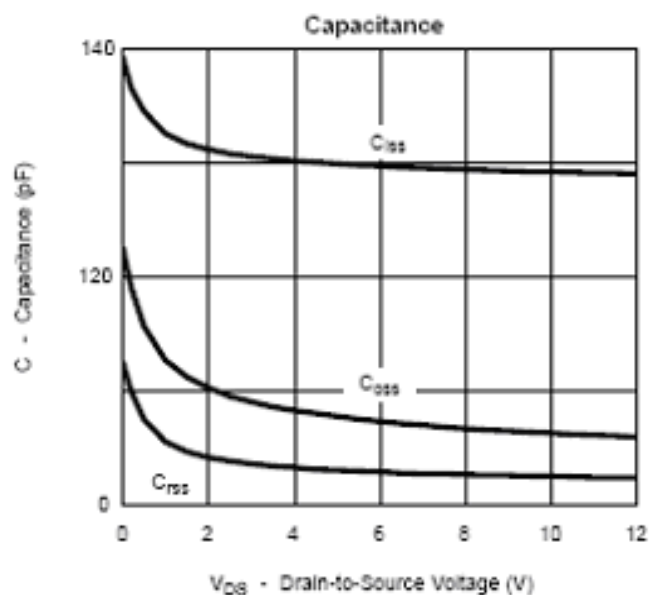
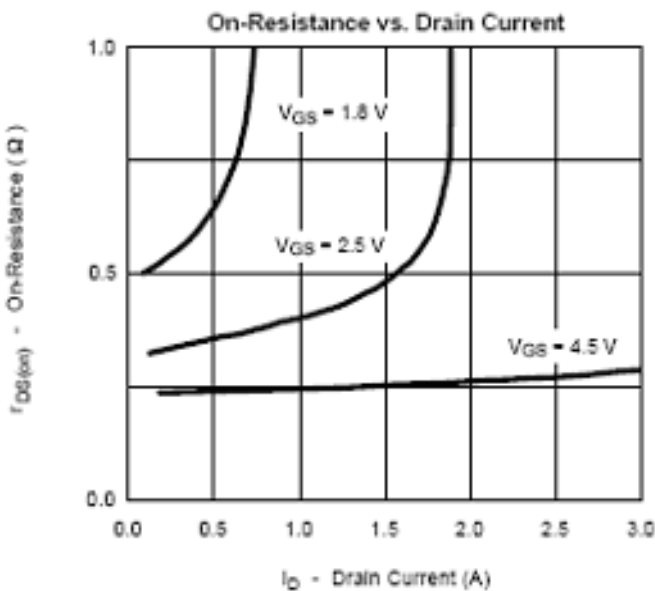
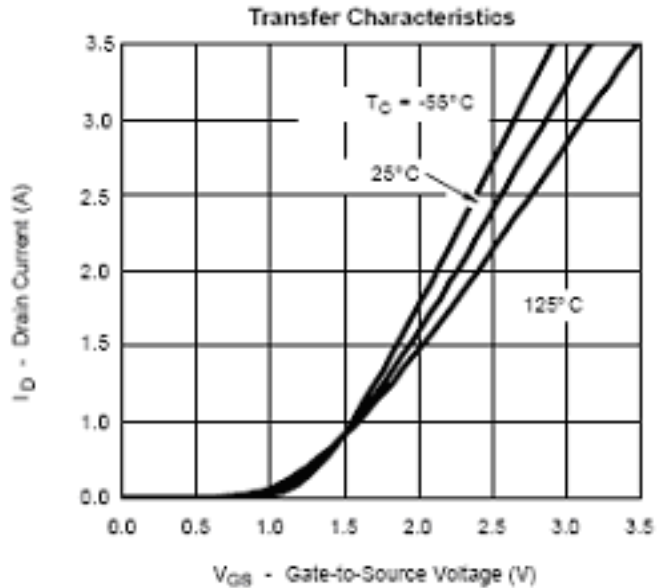
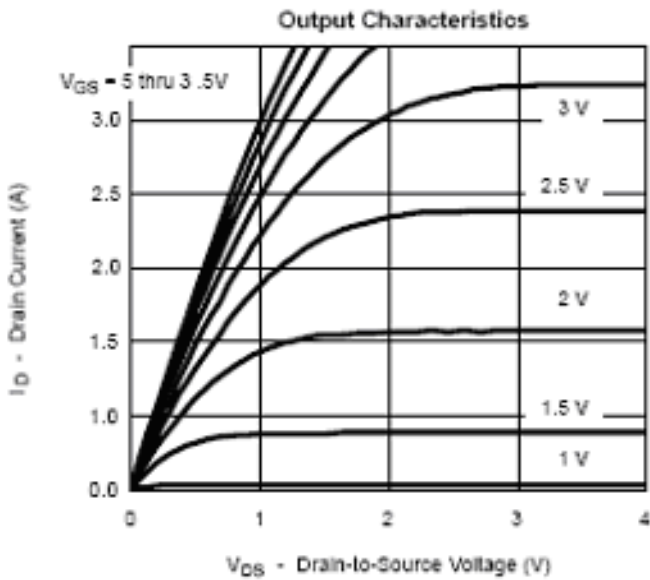
| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---------------------------------|---------------|---|-------|------|-----------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=-250\mu A$ | -20 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -0.35 | | -0.8 | |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 12V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-20V, V_{GS}=0V$ | | | -1 | uA |
| | | $V_{DS}=-20V, V_{GS}=0V$ $T_J=55^\circ C$ | | | -5 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS}\leq -4.5V, V_{GS}=-5V$ | -0.7 | | | A |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=-4.5V, I_D=-0.45A$ | | 0.42 | 0.52 | Ω |
| | | $V_{GS}=-2.5V, I_D=-0.35A$ | | 0.58 | 0.70 | |
| | | $V_{GS}=-1.8V, I_D=-0.25A$ | | 0.75 | 0.95 | |
| Forward Transconductance | g_{fs} | $V_{DS}=-10V, I_D=-0.25A$ | | 0.4 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=-0.15A, V_{GS}=0V$ | | -0.8 | -1.2 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=-10V, V_{GS}=-4.5V, I_D$ $\equiv -0.6A$ | | 1.5 | 2.0 | nC |
| Gate-Source Charge | Q_{gs} | | | 0.3 | | |
| Gate-Drain Charge | Q_{gd} | | | 0.35 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}=-10V, R_L=10\Omega,$ $I_D\equiv -0.4A$ $V_{GEN}=-4.5V, R_G=6\Omega$ | | 5 | 10 | ns |
| | t_r | | | 15 | 25 | |
| Turn-Off Time | $t_{d(off)}$ | | | 8 | 15 | |
| | t_f | | | 1.4 | 1.8 | |



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TYPICAL CHARACTERISTICS

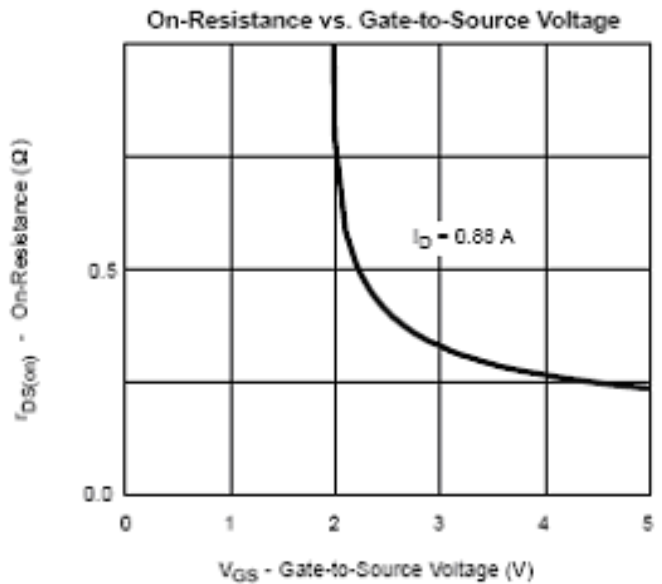
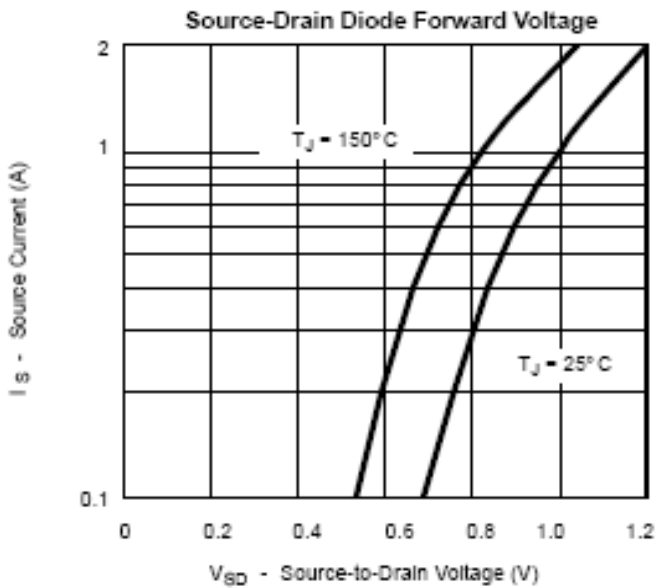
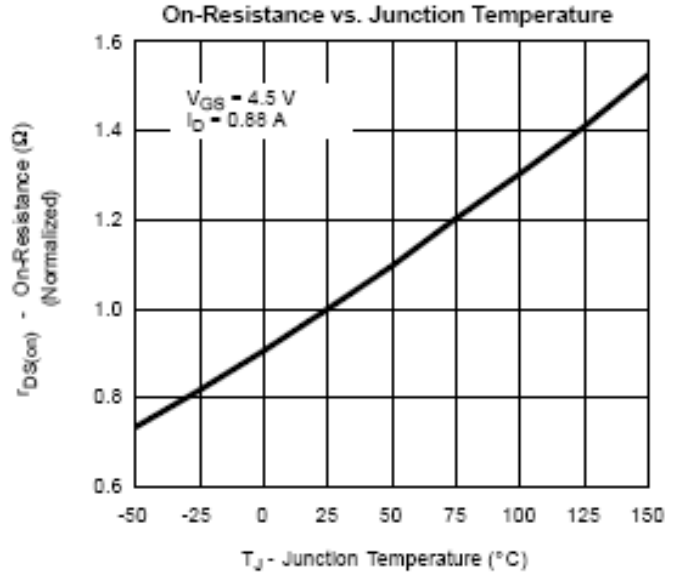
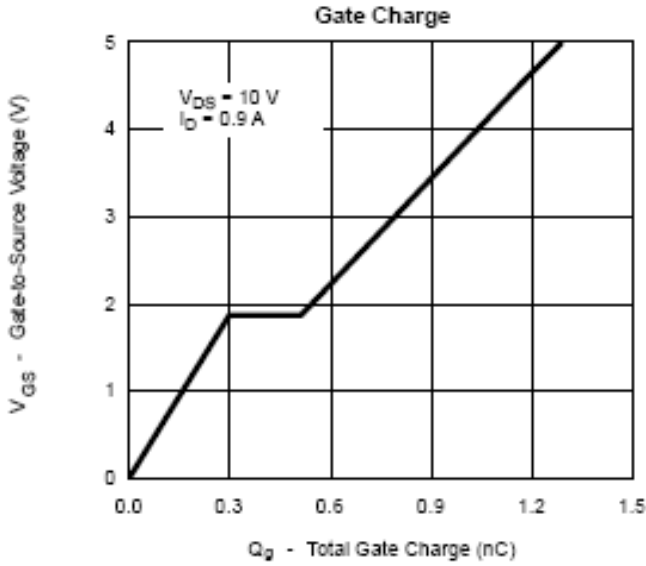




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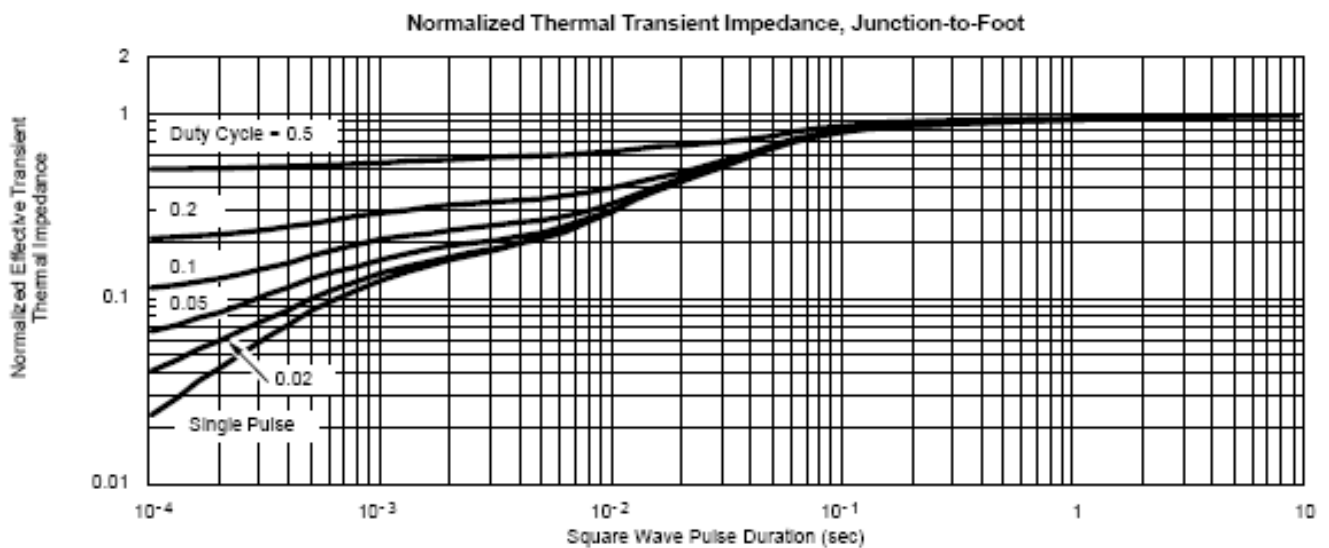
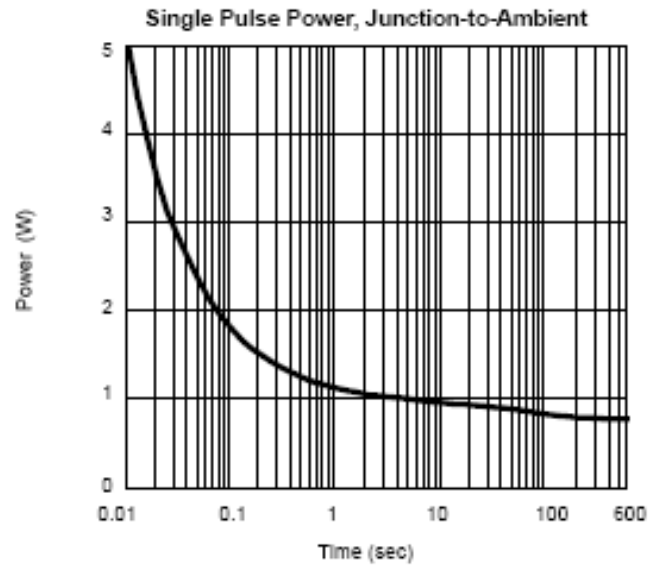
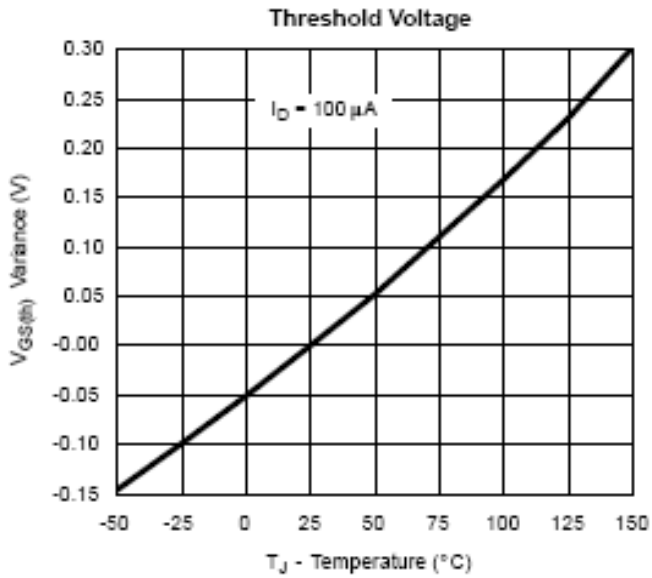




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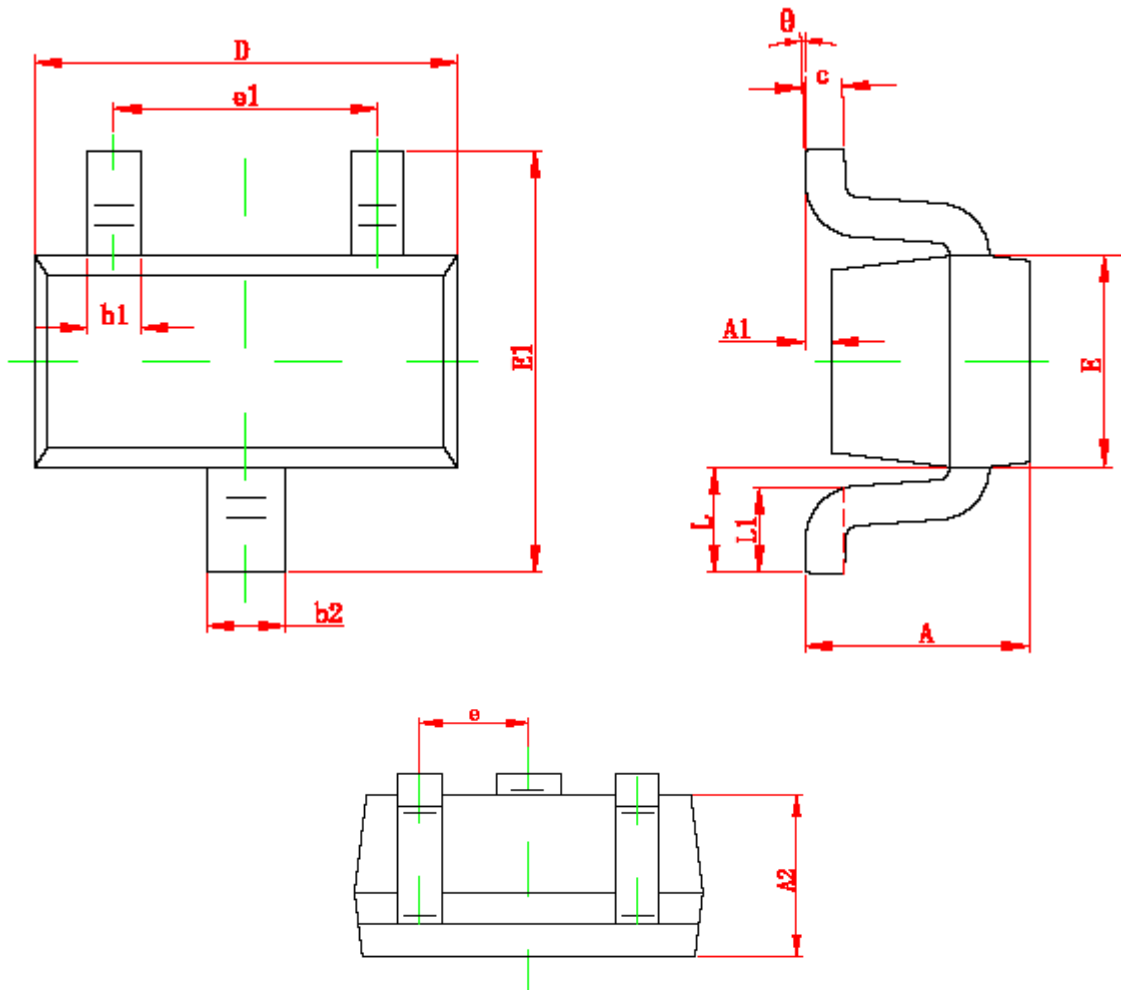




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SOT-523 PACKAGE OUTLINE



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.325 | 0.010 | 0.013 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.750 | 0.850 | 0.030 | 0.033 |
| E1 | 1.450 | 1.750 | 0.057 | 0.069 |
| e | 0.500 TYP | | 0.020 TYP | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.280 | 0.440 | 0.011 | 0.017 |
| θ | 0° | 4° | 0° | 4° |



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SYNC Power Corporation

7F-2, No.3-1, Park Street

NanKang District (NKSP), Taipei, Taiwan 115

Phone: 886-2-2655-8178

Fax: 886-2-2655-8468

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