



SPC6602

N & P Pair Enhancement Mode MOSFET

DESCRIPTION

The SPC6602 is the N- and 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.

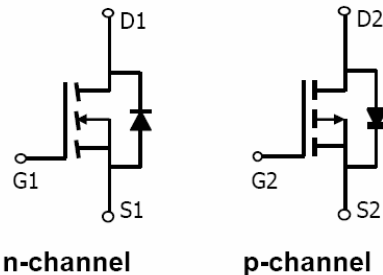
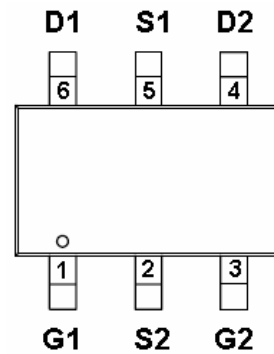
FEATURES

- ◆ N-Channel
30V/2.8A, $R_{DS(ON)} = 60m\Omega @ V_{GS} = 10V$
30V/2.3A, $R_{DS(ON)} = 80m\Omega @ V_{GS} = 4.5V$
- ◆ P-Channel
-30V/-2.8A, $R_{DS(ON)} = 105m\Omega @ V_{GS} = -10V$
-30V/-2.5A, $R_{DS(ON)} = 135m\Omega @ V_{GS} = -4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TSOP- 6P package design

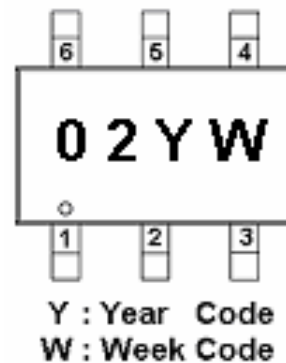
APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

PIN CONFIGURATION(TSOP- 6P)



PART MARKING





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PIN DESCRIPTION

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1 | G1 | Gate 1 |
| 2 | S2 | Source 2 |
| 3 | G2 | Gate 2 |
| 4 | D2 | Drain 2 |
| 5 | S1 | Source 1 |
| 6 | D1 | Drain1 |

ORDERING INFORMATION

| Part Number | Package | Part Marking |
|--------------|----------|--------------|
| SPC6602ST6RG | TSOP- 6P | 02YW |

※ Week Code : A ~ Z (1 ~ 26) ; a ~ z (27 ~ 52)

※ SPC6602ST6RG : Tape Reel ; Pb – Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

| Parameter | Symbol | Typical | | Unit |
|---|------------------|--------------|-----------|------|
| | | N-Channel | P-Channel | |
| Drain-Source Voltage | V _{DSS} | 30 | -30 | V |
| Gate –Source Voltage | V _{GSS} | ±20 | ±20 | V |
| Continuous Drain Current(T _J =150°C) | I _D | TA=25°C | -2.8 | A |
| | | TA=70°C | -2.1 | |
| Pulsed Drain Current | I _{DM} | 10 | -8 | A |
| Continuous Source Current(Diode Conduction) | I _S | 1.25 | -1.4 | A |
| Power Dissipation | P _D | 1.15 | | W |
| | | 0.75 | | |
| Operating Junction Temperature | T _J | -55/150 | | °C |
| Storage Temperature Range | T _{STG} | -55/150 | | °C |
| Thermal Resistance-Junction to Ambient | R _{θJA} | T ≤ 10sec | 50 | °C/W |
| | | Steady State | 90 | |



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ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

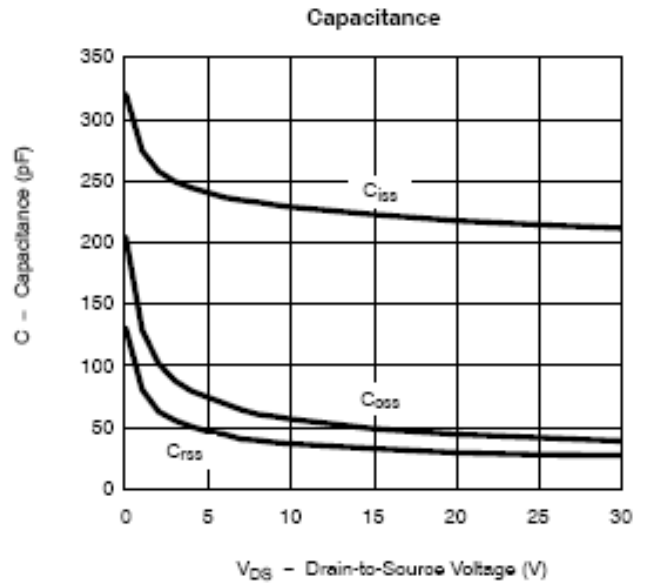
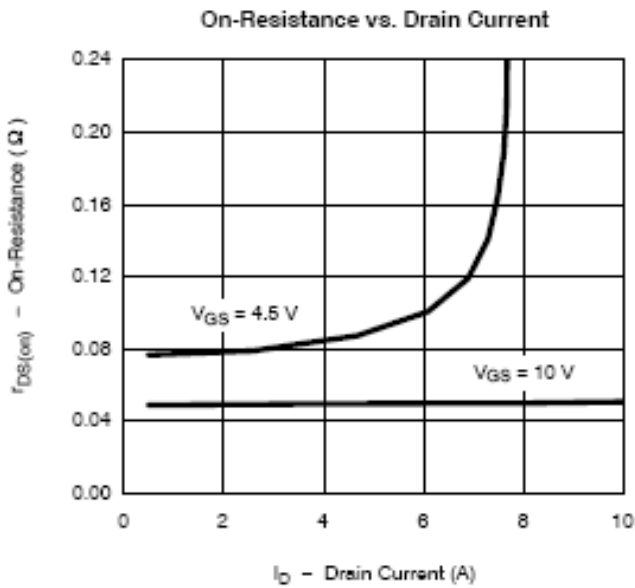
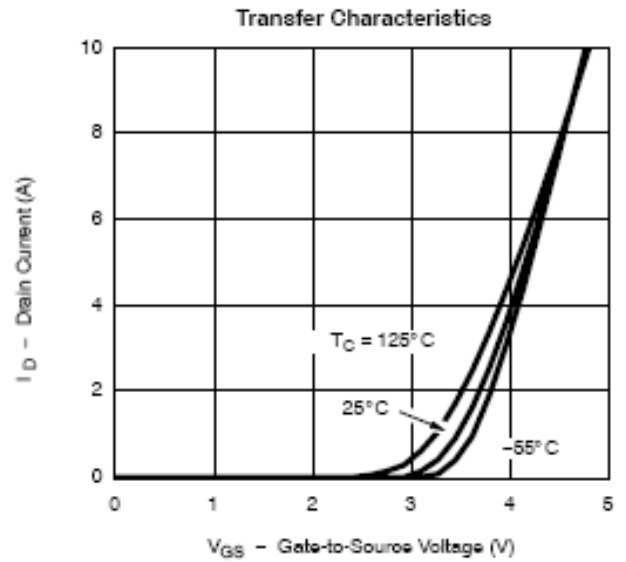
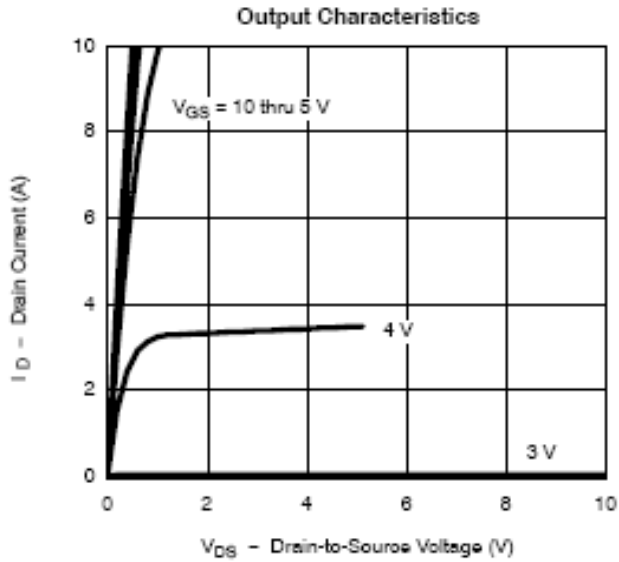
| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit | |
|---------------------------------|----------------------|---|-----------------|--|-------|-------|----|
| Static | | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} =0V, I _D = 250uA | N-Ch | 30 | | V | |
| | | V _{GS} =0V, I _D =-250uA | P-Ch | -30 | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250uA | N-Ch | 1 | 3 | V | |
| | | V _{DS} =V _{GS} , I _D =-250uA | P-Ch | 1 | -3 | | |
| Gate Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =±20V | N-Ch | | ±100 | nA | |
| | | V _{DS} =0V, V _{GS} =±20V | P-Ch | | ±100 | | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 30V, V _{GS} =0V | N-Ch | | 1 | uA | |
| | | V _{DS} =-30V, V _{GS} =0V | P-Ch | | -1 | | |
| | | V _{DS} = 30V, V _{GS} =0V T _J =55°C | N-Ch | | 10 | | |
| | | V _{DS} =-30V, V _{GS} =0V T _J =55°C | P-Ch | | -10 | | |
| On-State Drain Current | I _{D(on)} | V _{DS} ≥ 5V, V _{GS} = 10V | N-Ch | 6 | | A | |
| | | V _{DS} ≤ -5V, V _{GS} =-10V | P-Ch | -6 | | | |
| Drain-Source On-Resistance | R _{DS(on)} | V _{GS} = 10V, I _D = 2.8A | N-Ch | | 0.043 | 0.060 | Ω |
| | | V _{GS} =-10V, I _D =-2.8A | P-Ch | | 0.088 | 0.105 | |
| | | V _{GS} = 4.5V, I _D = 2.3A | N-Ch | | 0.056 | 0.080 | |
| | | V _{GS} =-4.5V, I _D =-2.5A | P-Ch | | 0.118 | 0.135 | |
| Forward Transconductance | g _{fs} | V _{DS} =4.5V, I _D =2.8A | N-Ch | | 4.6 | S | |
| | | V _{DS} =-10V, I _D =-2.8A | P-Ch | | 4 | | |
| Diode Forward Voltage | V _{SD} | I _S = 1.25A, V _{GS} =0V | N-Ch | | 0.8 | 1.2 | V |
| | | I _S =-1.2A, V _{GS} =0V | P-Ch | | -0.8 | -1.2 | |
| Dynamic | | | | | | | |
| Total Gate Charge | Q _g | N-Channel V _{DS} =15 , V _{GS} =4.5V , I _D =2.0A | N-Ch | | 4.5 | 10 | nC |
| Gate-Source Charge | Q _{gs} | | P-Channel | P-Ch | | 5.8 | |
| | | Gate-Drain Charge | Q _{gd} | V _{DS} =-15V , V _{GS} =-4.5V , I _D =-2.0A | N-Ch | | |
| | | | | P-Ch | | 0.8 | |
| Turn-On Time | t _{d(on)} | N-Channel V _{DD} =15 , R _L =10Ω V _{GEN} =10V , R _G =3Ω | N-Ch | | 8 | 20 | nS |
| | | | P-Ch | | 9 | 20 | |
| | t _r | | N-Ch | | 12 | 30 | |
| | | | P-Ch | | 9 | 20 | |
| Turn-Off Time | t _{d(off)} | P-Channel V _{DD} =-15V , R _L =15Ω V _{GEN} =-10V , R _G =3Ω | N-Ch | | 17 | 35 | |
| | | | P-Ch | | 18 | 35 | |
| | t _f | | N-Ch | | 8 | 20 | |
| | | | P-Ch | | 6 | 20 | |



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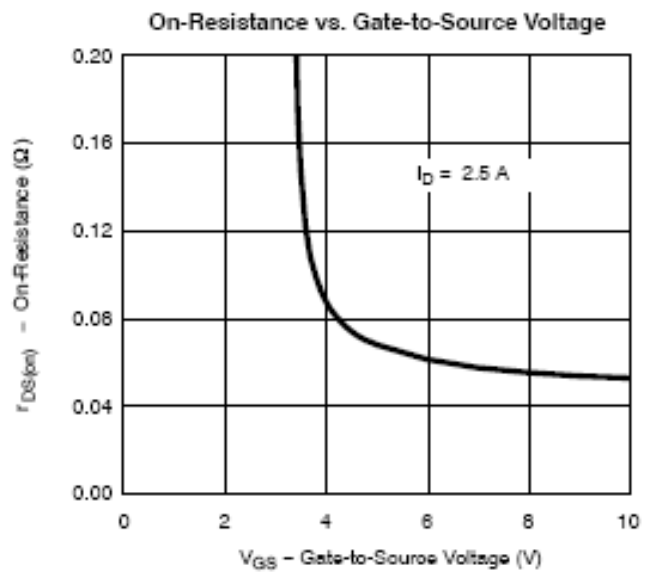
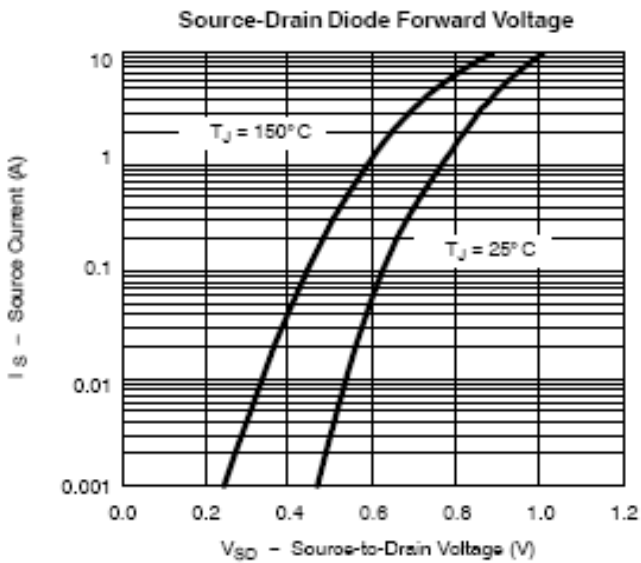
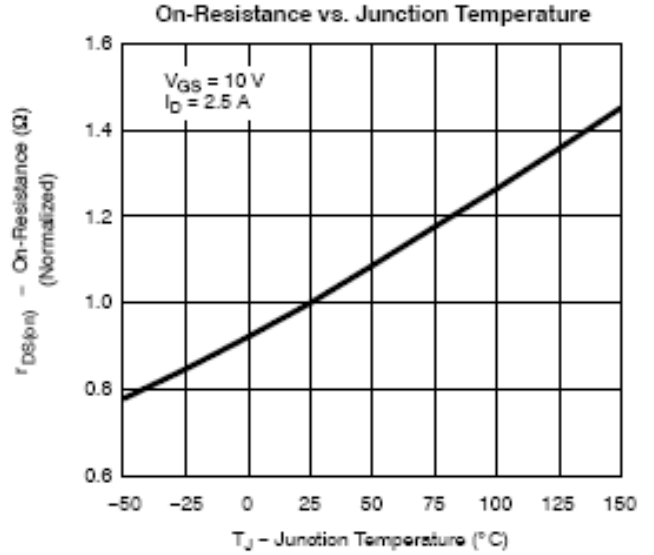
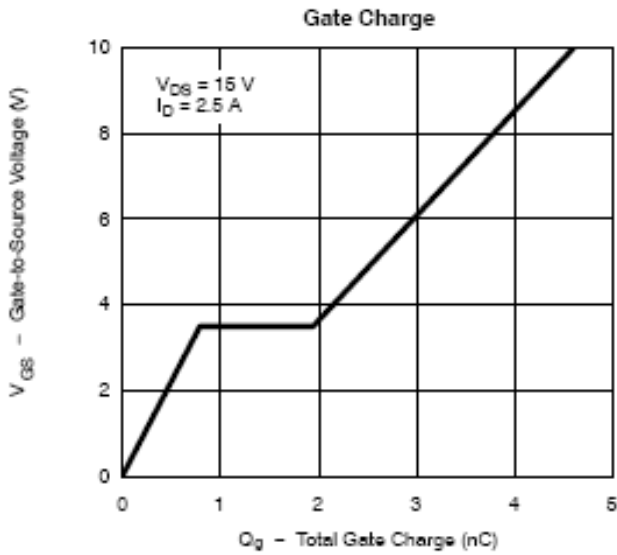
TYPICAL CHARACTERISTICS (N-Channel)





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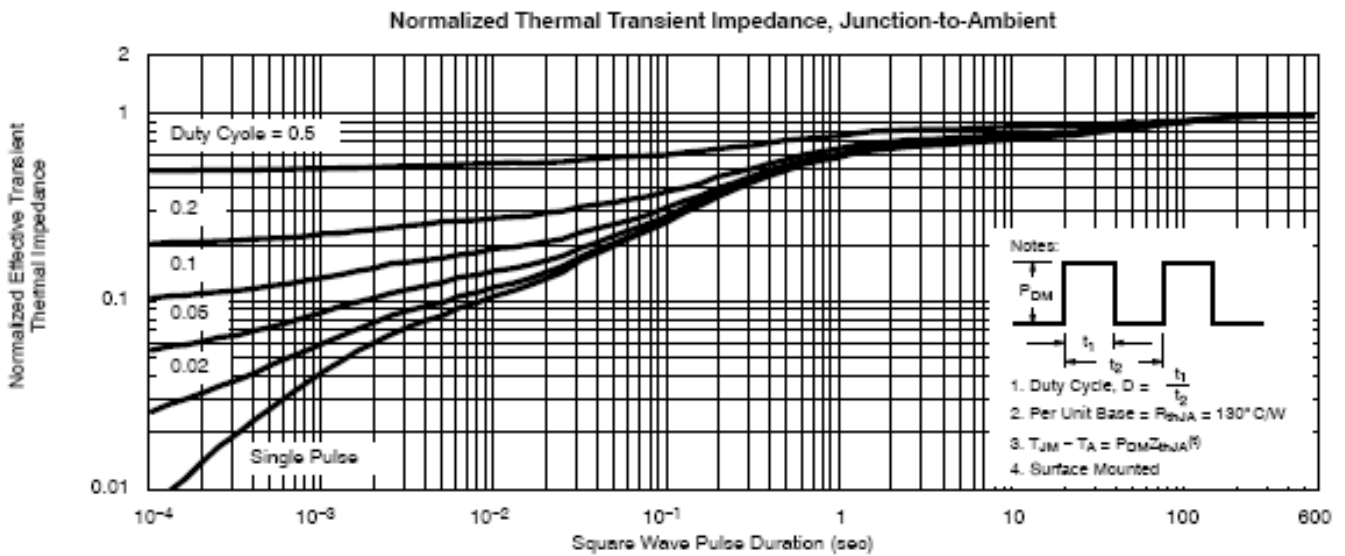
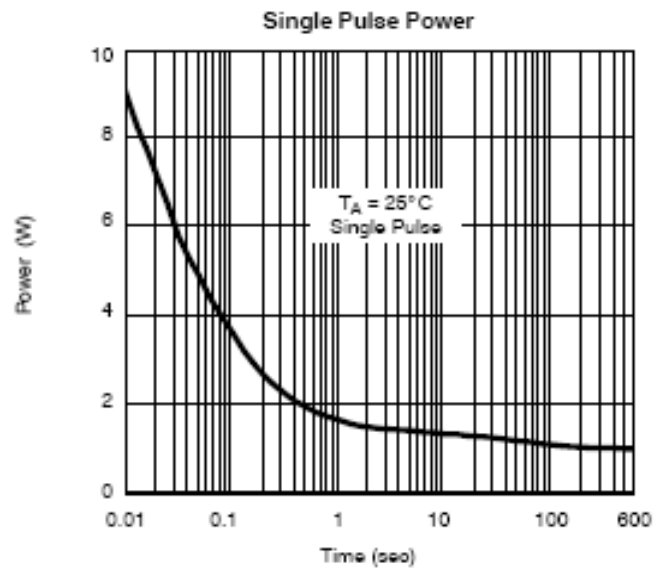
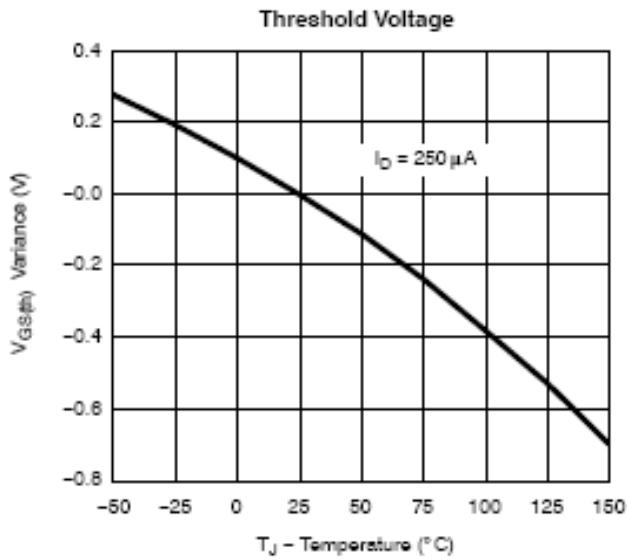
TYPICAL CHARACTERISTICS





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TYPICAL CHARACTERISTICS

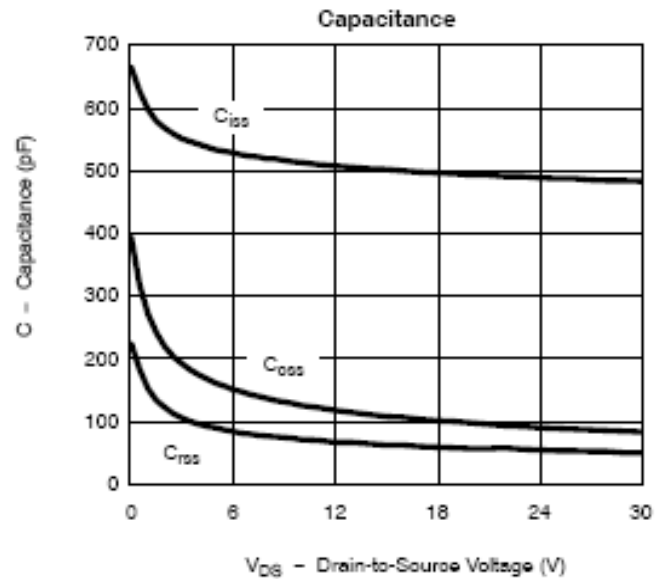
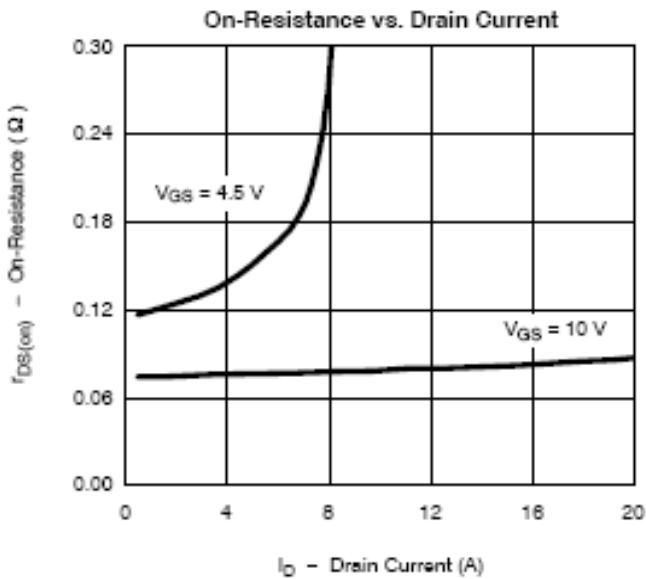
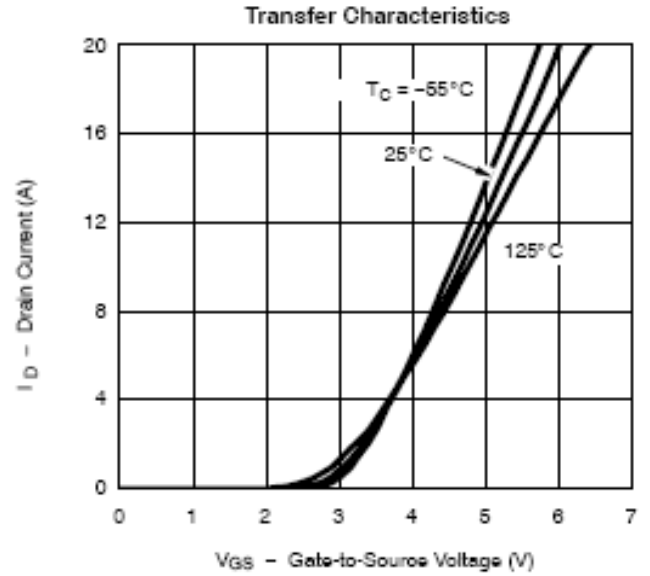
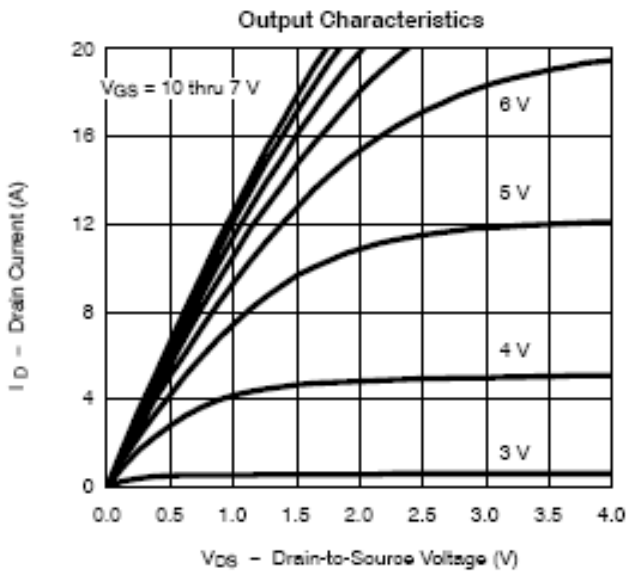




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TYPICAL CHARACTERISTICS (P-Channel)

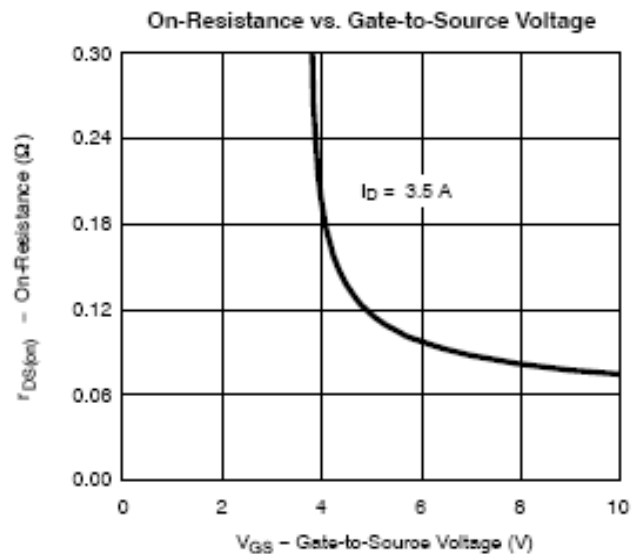
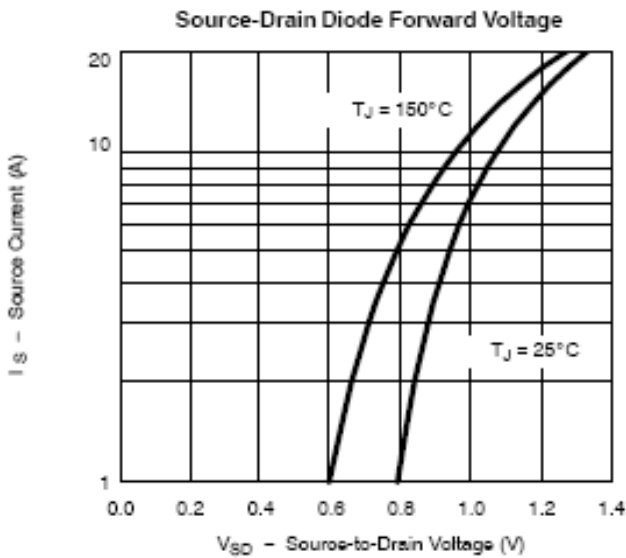
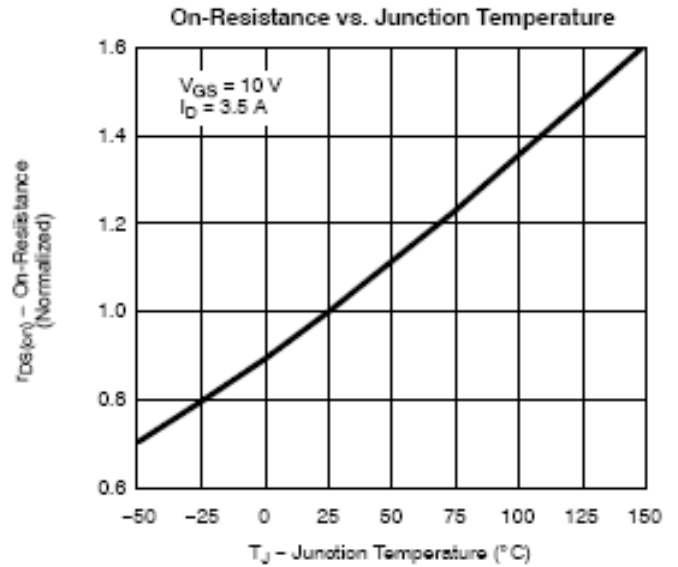
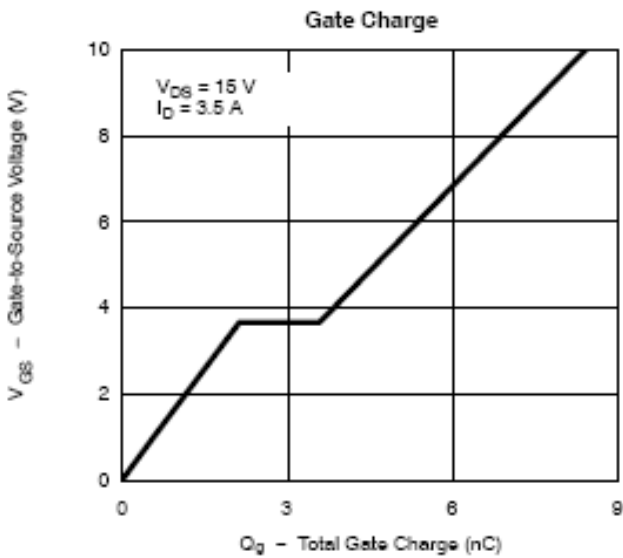




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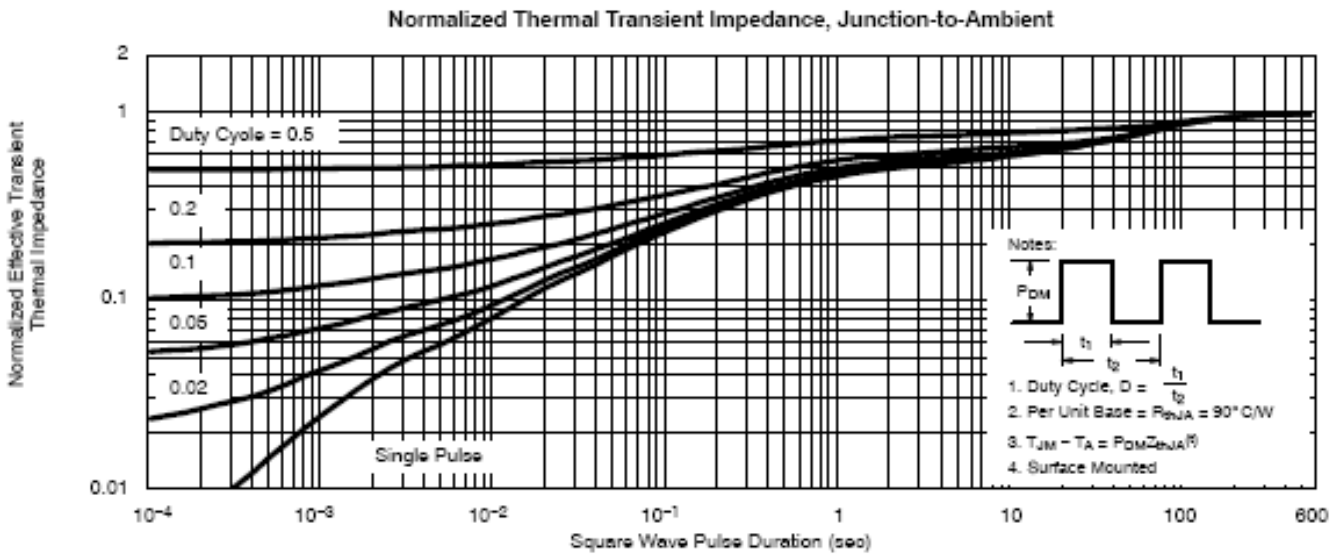
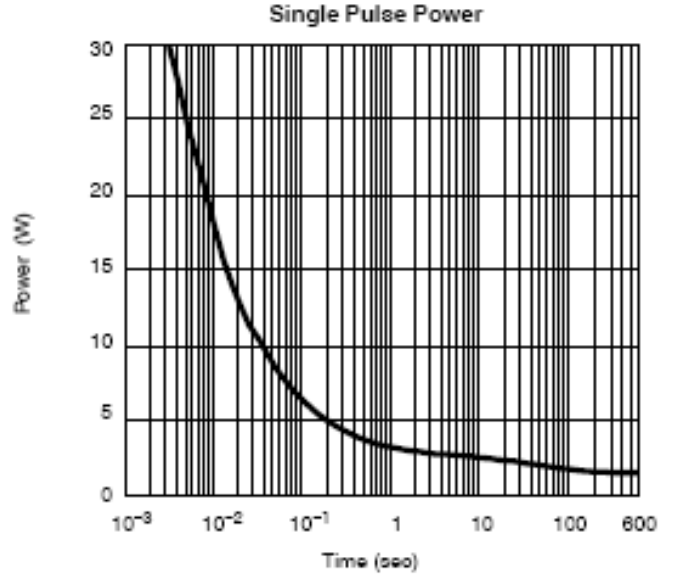
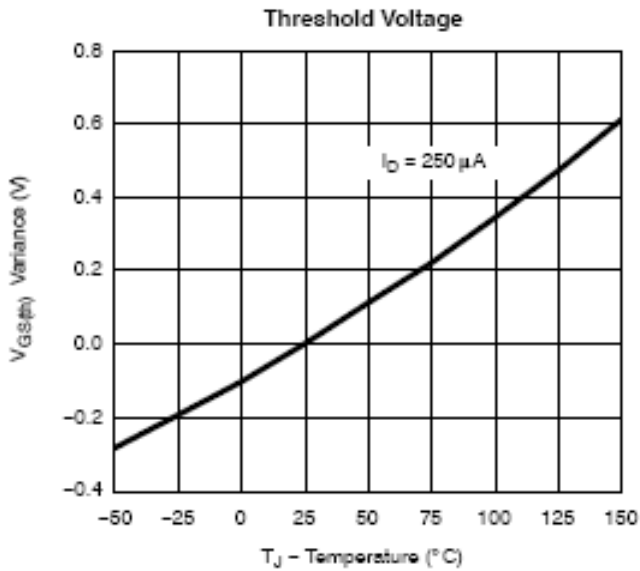
TYPICAL CHARACTERISTICS (P-Channel)





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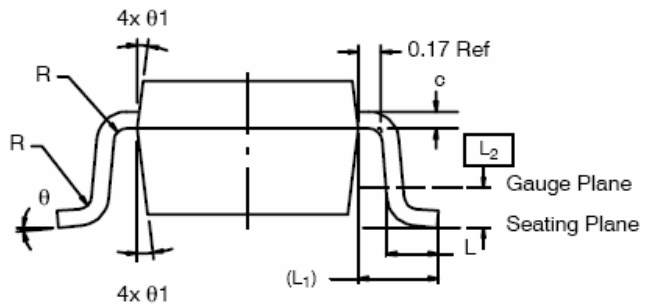
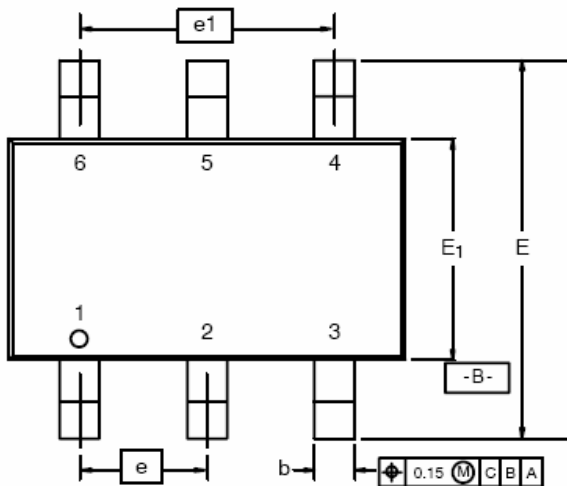




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TSOP- 6P PACKAGE OUTLINE



| Dim | MILLIMETERS | | | INCHES | | |
|----------------------|-------------|------|------|------------|-------|-------|
| | Min | Nom | Max | Min | Nom | Max |
| A | 0.91 | - | 1.10 | 0.036 | - | 0.043 |
| A₁ | 0.01 | - | 0.10 | 0.0004 | - | 0.004 |
| A₂ | 0.90 | - | 1.00 | 0.035 | 0.038 | 0.039 |
| b | 0.30 | 0.32 | 0.45 | 0.012 | 0.013 | 0.018 |
| c | 0.10 | 0.15 | 0.20 | 0.004 | 0.006 | 0.008 |
| D | 2.95 | 3.05 | 3.10 | 0.116 | 0.120 | 0.122 |
| E | 2.70 | 2.85 | 2.98 | 0.106 | 0.112 | 0.117 |
| E₁ | 1.55 | 1.65 | 1.70 | 0.061 | 0.065 | 0.067 |
| e | 1.00 BSC | | | 0.0394 BSC | | |
| e₁ | 1.90 | 2.00 | 2.10 | 0.075 | 0.080 | 0.085 |
| L | 0.35 | - | 0.50 | 0.014 | - | 0.020 |
| L₁ | 0.60 Ref | | | 0.024 Ref | | |
| L₂ | 0.25 BSC | | | 0.010 BSC | | |
| R | 0.10 | - | - | 0.004 | - | - |
| θ | 0° | 4° | 8° | 0° | 4° | 8° |
| θ₁ | 7° Nom | | | 7° Nom | | |



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