

SE720

PNP Low VCEsat Transistor with N-Channel Trench MOSFET

Revision: A

General Description

Combination of PNP low VCEsat Breakthrough in Small Signal transistor and N-Channel Trench MOSFET

- Simple Drive Requirement
- Small Package Outline
- Surface Mount Device

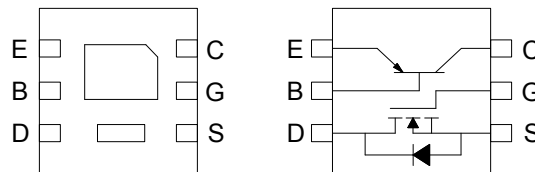
Features

For a single MOSFET

- $V_{DS} = 20V$
- $R_{DS(ON)} = 500m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} = 900m\Omega @ V_{GS}=2.5V$

Pin configurations

See Diagram below

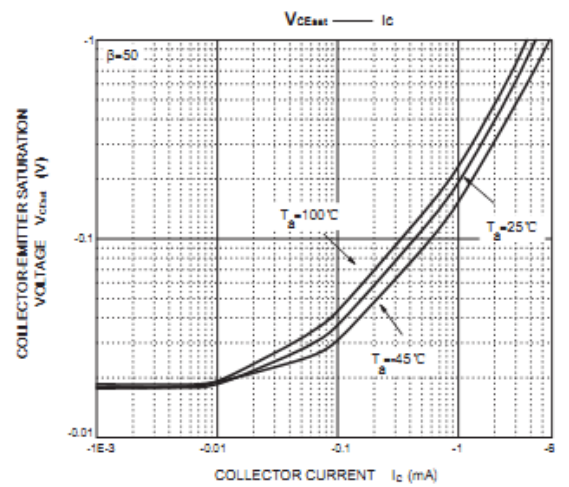
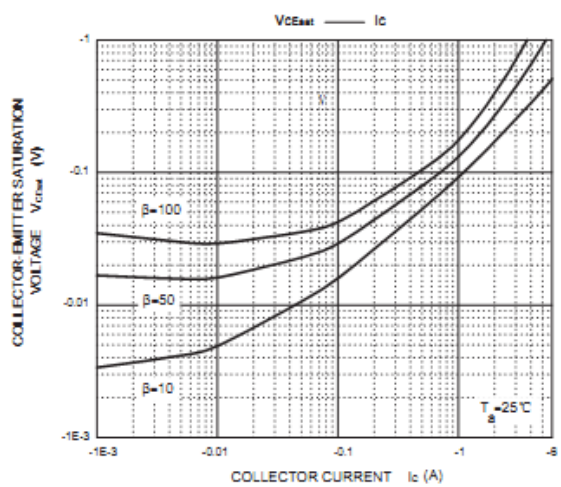
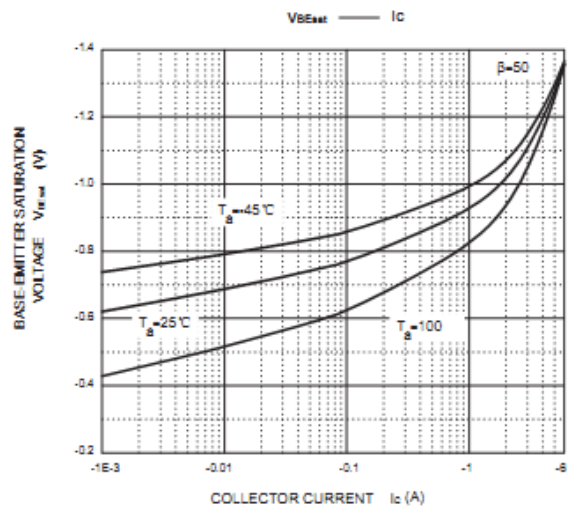
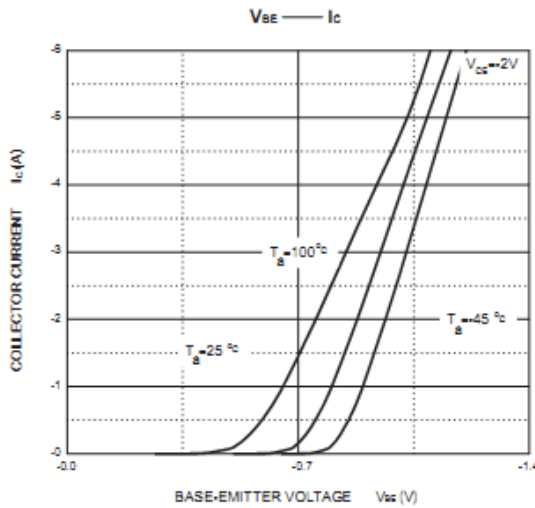
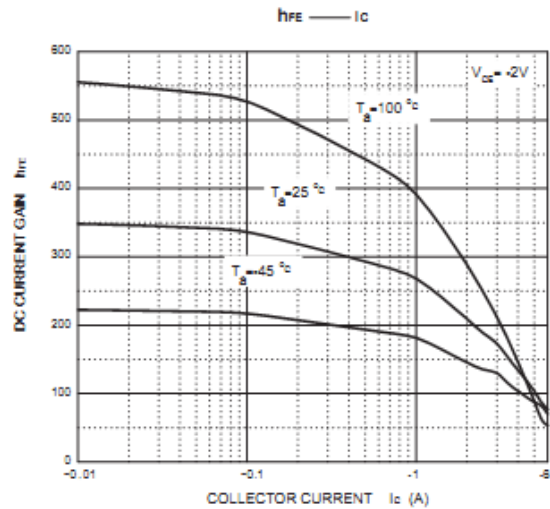
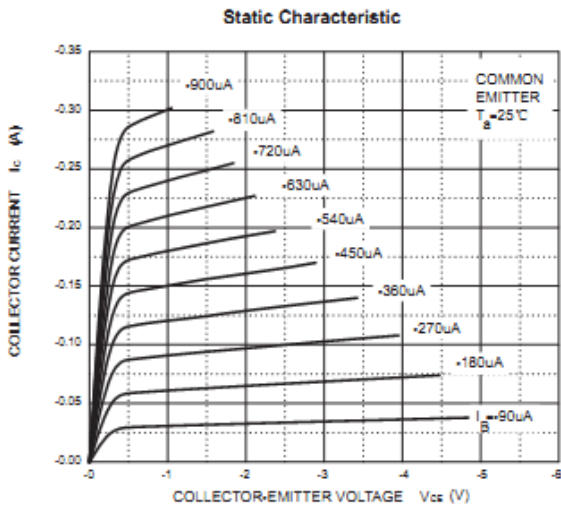


Absolute Maximum Ratings

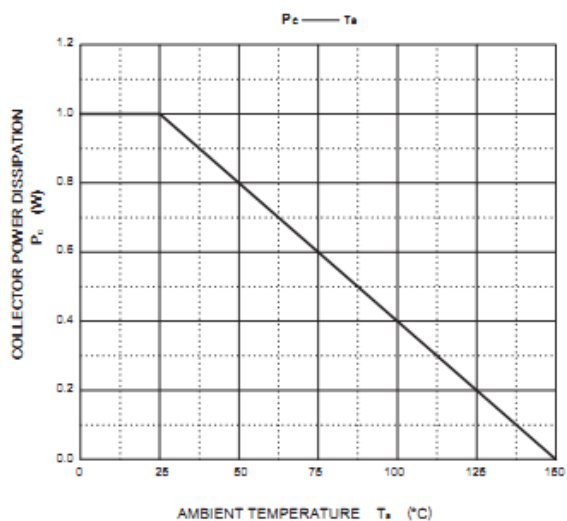
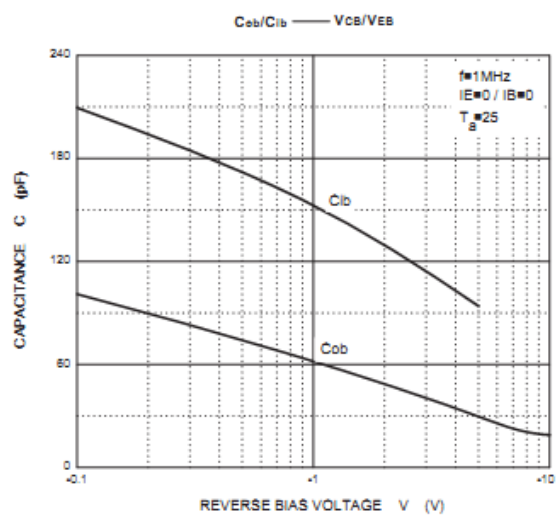
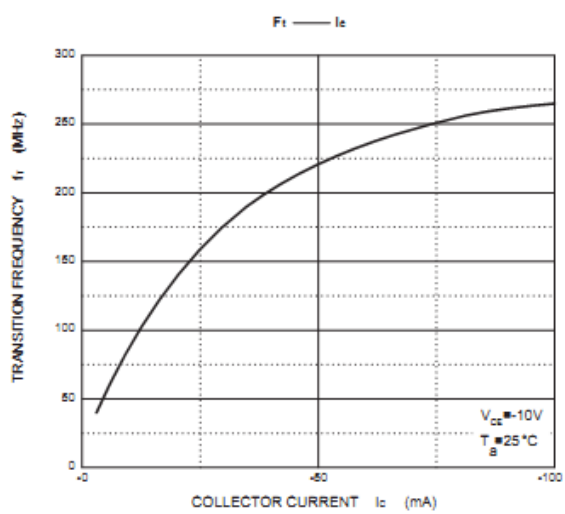
| Parameter | Symbol | Rating | Units | |
|--|------------|----------|------------|----|
| Drain-Source Voltage (MOSFET) | V_{DS} | 20 | V | |
| Collector-Emitter breakdown voltage (PNP transistor) | BV_{CEO} | -25 | V | |
| Gate-Source Voltage (MOSFET) | V_{GS} | ± 12 | V | |
| Collector-Base breakdown voltage (PNP transistor) | V_{CB} | -25 | V | |
| Emitter-Base breakdown voltage (PNP transistor) | | -6 | V | |
| Drain Current(MOSFET) | Continuous | 0.3 | A | |
| | Pulsed | 0.8 | | |
| Total Power Dissipation | @TA=25°C | P_D | 2 | W |
| Operating Junction Temperature Range | T_J | | -55 to 150 | °C |

| Electrical Characteristics (T _J =25°C unless otherwise noted) | | | | | | |
|--|--|---|-----|------|-------|-------|
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
| Static Characteristics | | | | | | |
| BV _{DSS} | Drain-Source Breakdown Voltage | I _D =250μA, V _{GS} =0 V | 20 | | | V |
| I _{DSS} | Drain to Source Leakage Current | V _{DS} = 20V, V _{GS} =0V | | | 1 | μA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} =8V | | | 10 | nA |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} = V _{GS} , I _D =250μA | | | 2.5 | V |
| R _{DS(ON)} | Static Drain-Source On-Resistance | V _{GS} =4.5V, I _D =0.1A | - | 500 | 750 | mΩ |
| | | V _{GS} =2.5V, I _D =0.1A | | 900 | 1000 | mΩ |
| V _{SD} | Diode Forward Voltage | I _{SD} =150mA, V _{GS} =0V | | 0.68 | 1.2 | V |
| DYNAMIC PARAMETERS | | | | | | |
| C _{iss} | Input Capacitance | V _{GS} =0V, V _{DS} =16V, f=200kHz | | 120 | | pF |
| C _{oss} | Output Capacitance | | | 40 | | pF |
| C _{rss} | Reverse Transfer Capacitance | | | 25 | | pF |
| PNP Transistor Specifications | | | | | | |
| V _{(BR)CBO} | Collector-base breakdown Voltage | I _C =-50μA, I _E =0 | -40 | | | V |
| V _{(BR)CEO} | Collector-emitter breakdown Voltage | I _C =-1mA, I _B =0 | -20 | | | |
| V _{(BR)EBO} | Emitter-base breakdown Voltage | I _E =-50μA, I _C =0 | -5 | | | |
| I _{CBO} | Collector-base breakdown Current | V _{CB} =-40V, I _E =0 | | | -200 | μA |
| I _{EBO} | Emitter-base breakdown Current | V _{EB} =5V, I _C =0 | | | -200 | |
| h _{FE} | DC current gain | V _{CE} =-2, I _C =-500mA | 100 | | 300 | |
| V _{CE(sat)} | Collector-emitter saturation voltage | I _C =-0.8A, I _B =-10mA | | -320 | -500 | mV |
| Thermal Resistance | | | | | | |
| Symbol | Parameter | | Typ | Max | Units | |
| R _{θJA} | Junction to Ambient At Steady State (MOSFET) | | - | 150 | °C/W | |
| R _{θJA} | Junction to Ambient At Steady State (PNP Transistor) | | | 125 | °C/W | |

Typical Characteristics



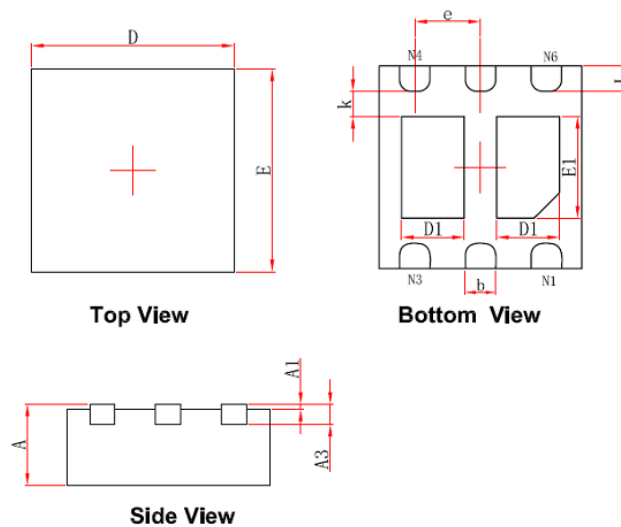
Typical Characteristics



SE720

Package Outline Dimension

DFN2X2X0.75



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------------|----------------------|-------------|
| | Min. | Max. | Min. | Max. |
| A | 0.700/0.800 | 0.800/0.900 | 0.028/0.031 | 0.031/0.035 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| A3 | 0.203REF. | | 0.008REF. | |
| D | 1.924 | 2.076 | 0.076 | 0.082 |
| E | 1.924 | 2.076 | 0.076 | 0.082 |
| D1 | 0.520 | 0.720 | 0.020 | 0.028 |
| E1 | 0.900 | 1.100 | 0.035 | 0.043 |
| k | 0.200MIN. | | 0.008MIN. | |
| b | 0.250 | 0.350 | 0.010 | 0.014 |
| e | 0.650TYP. | | 0.026TYP. | |
| L | 0.174 | 0.326 | 0.007 | 0.013 |

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