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[Vishay/Siliconix](#)
[SI4831DY-T1-E3](#)

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New Product

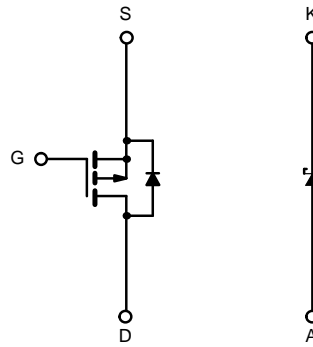
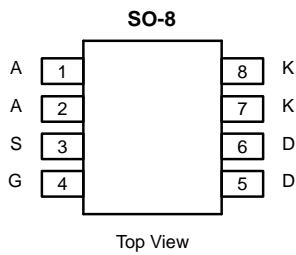
Si4831DY
Vishay Siliconix

P-Channel 30-V (D-S) MOSFET with Schottky Diode

| MOSFET PRODUCT SUMMARY | | |
|------------------------|----------------------------------|--------------------|
| V _{DS} (V) | r _{DS(on)} (Ω) | I _D (A) |
| -30 | 0.045 @ V _{GS} = -10 V | ±5 |
| | 0.090 @ V _{GS} = -4.5 V | ±3.5 |

| SCHOTTKY PRODUCT SUMMARY | | |
|--------------------------|---|--------------------|
| V _{KA} (V) | V _f (V) Diode Forward Voltage | I _F (A) |
| 30 | 0.53 V @ 3 A | 3 |

LITTLE FOOT PLUS™



P-Channel MOSFET

| ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED) | | | | |
|---|-----------------------------------|------------------------|------|---|
| Parameter | Symbol | Limit | Unit | |
| Drain-Source Voltage (MOSFET) | V _{DS} | -30 | V | |
| Reverse Voltage (Schottky) | V _{KA} | 30 | | |
| Gate-Source Voltage (MOSFET) | V _{GS} | ±20 | | |
| Continuous Drain Current (T _J = 150 °C) (MOSFET) ^{a, b} | I _D | T _A = 25 °C | ±5 | A |
| | | T _A = 70 °C | ±3.9 | |
| Pulsed Drain Current (MOSFET) | I _{DM} | ±20 | | |
| Continuous Source Current (MOSFET Diode Conduction) ^{a, b} | I _S | -1.7 | | |
| Average Forward Current (Schottky) | I _F | 3 | | |
| Pulsed Forward Current (Schottky) | I _{FM} | 20 | | |
| Maximum Power Dissipation (MOSFET) ^{a, b} | P _D | T _A = 25 °C | 2 | W |
| | | T _A = 70 °C | 1.28 | |
| Maximum Power Dissipation (Schottky) ^{a, b} | P _D | T _A = 25 °C | 1.83 | |
| | | T _A = 70 °C | 1.17 | |
| Operating Junction and Storage Temperature Range | T _J , T _{stg} | -55 to 150 | °C | |

Notes
 a. Surface Mounted on FR4 Board.
 b. t ≤ 10 sec.



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| THERMAL RESISTANCE RATINGS | | | | | |
|--|----------|------------|---------|---------|------|
| Parameter | Device | Symbol | Typical | Maximum | Unit |
| Maximum Junction-to-Ambient ($t \leq 10$ sec) ^a | MOSFET | R_{thJA} | 52 | 62.5 | °C/W |
| | Schottky | | 56 | 68 | |
| Maximum Junction-to-Ambient ($t = \text{steady state}$) ^a | MOSFET | | 82 | 100 | |
| | Schottky | | 91 | 110 | |
| Maximum Junction-to-Foot | MOSFET | R_{thJF} | 27 | 33 | |
| | Schottky | | 32 | 40 | |

Notes

- a. Surface Mounted on FR4 Board.
- b. $t \leq 10$ sec.

| MOSFET SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) | | | | | | |
|--|--------------|--|------|-------|-----------|---------------|
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
| Static | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$ | -1.0 | | | V |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$ | | | -1 | μA |
| | | $V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 75^\circ\text{C}$ | | | -10 | |
| On-State Drain Current ^a | $I_{D(on)}$ | $V_{DS} \geq -5 \text{ V}, V_{GS} = -10 \text{ V}$ | -20 | | | A |
| Drain-Source On-State Resistance ^a | $r_{DS(on)}$ | $V_{GS} = -10 \text{ V}, I_D = -5 \text{ A}$ | | 0.036 | 0.045 | Ω |
| | | $V_{GS} = -4.5 \text{ V}, I_D = -3.5 \text{ A}$ | | 0.060 | 0.090 | |
| Forward Transconductance ^a | g_{fs} | $V_{DS} = -15 \text{ V}, I_D = -5 \text{ A}$ | | 9 | | S |
| Diode Forward Voltage ^a | V_{SD} | $I_S = -1.7 \text{ A}, V_{GS} = 0 \text{ V}$ | | -0.75 | -1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q_g | $V_{DS} = -15 \text{ V}, V_{GS} = -5 \text{ V}, I_D = -5 \text{ A}$ | | 10 | 20 | nC |
| Gate-Source Charge | Q_{gs} | | 4.5 | | | |
| Gate-Drain Charge | Q_{gd} | | 3.6 | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD} = -15 \text{ V}, R_L = 15 \Omega$ $I_D \cong -1 \text{ A}, V_{GEN} = -10 \text{ V}, R_G = 6 \Omega$ | | 13 | 25 | ns |
| Rise Time | t_r | | 15 | 30 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | 37 | 70 | | |
| Fall Time | t_f | | 14 | 30 | | |
| Source-Drain Reverse Recovery Time | t_{rr} | $I_F = -1.7 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$ | | 35 | 70 | |

Notes

- a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

| SCHOTTKY SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) | | | | | | |
|--|----------|---|-----|-------|------|------|
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
| Forward Voltage Drop | V_F | $I_F = 3 \text{ A}$ | | 0.485 | 0.53 | V |
| | | $I_F = 3 \text{ A}, T_J = 125^\circ\text{C}$ | | 0.42 | 0.47 | |
| Maximum Reverse Leakage Current | I_{rm} | $V_r = 30 \text{ V}$ | | 0.008 | 0.1 | mA |
| | | $V_r = 30 \text{ V}, T_J = 75^\circ\text{C}$ | | 0.4 | 5 | |
| | | $V_r = 30 \text{ V}, T_J = 125^\circ\text{C}$ | | 6.5 | 20 | |
| Junction Capacitance | C_T | $V_r = 15 \text{ V}$ | | 102 | | pF |

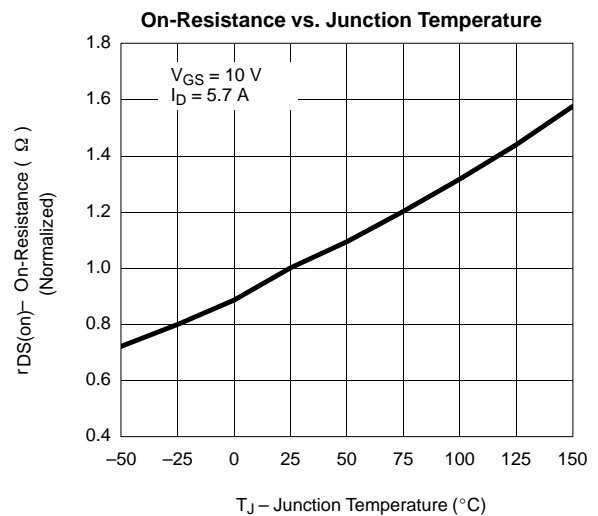
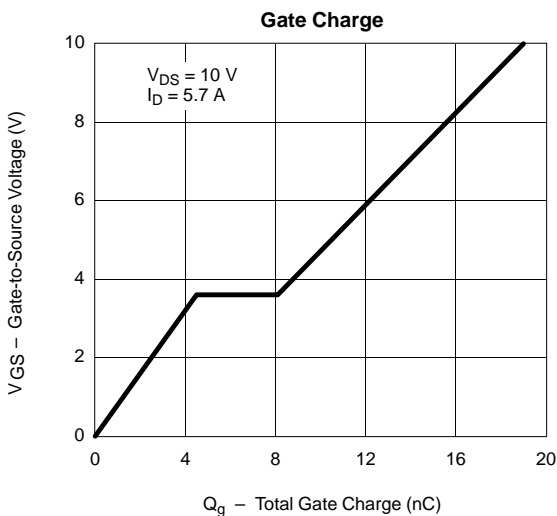
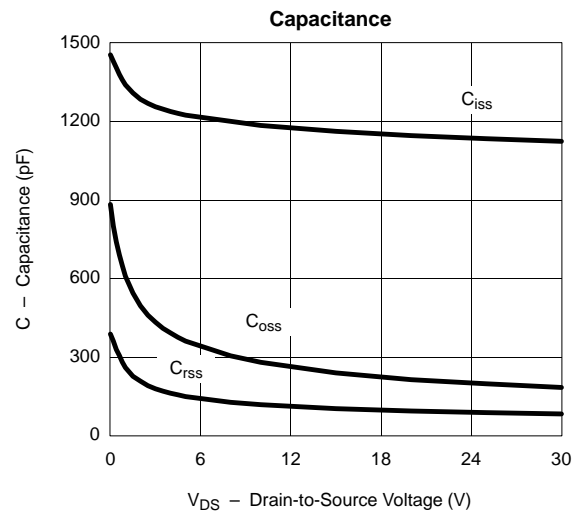
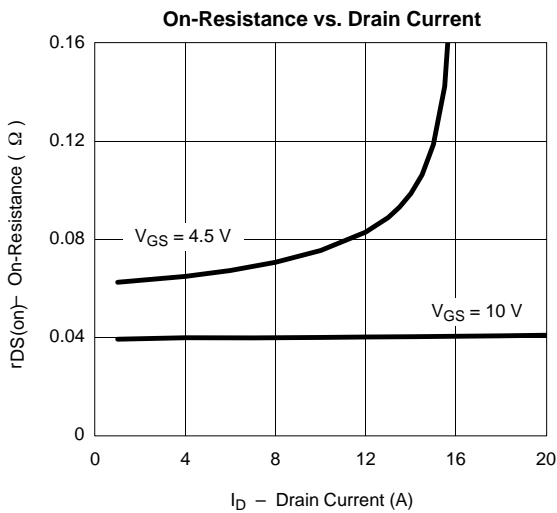
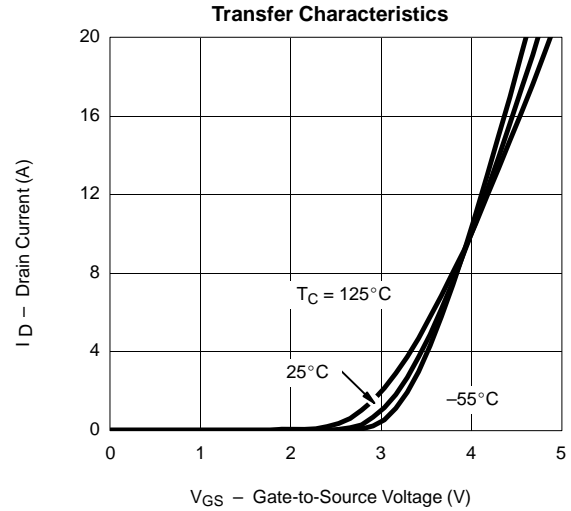
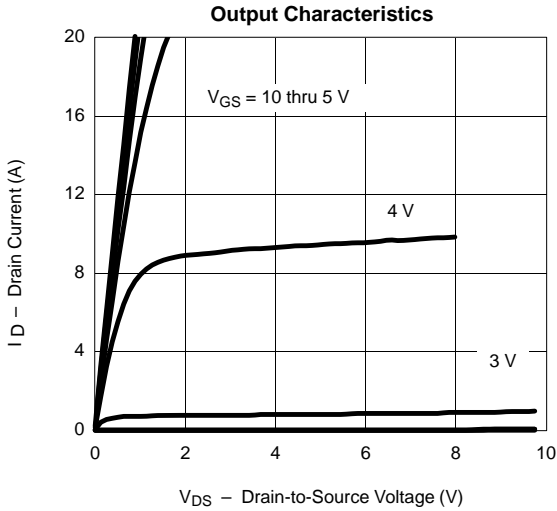


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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

MOSFET



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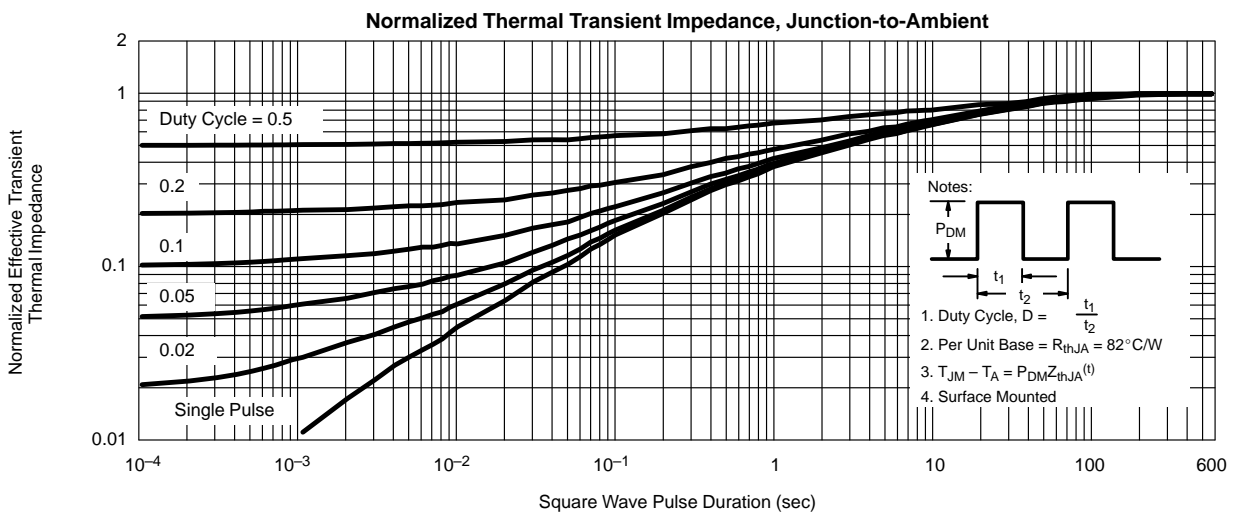
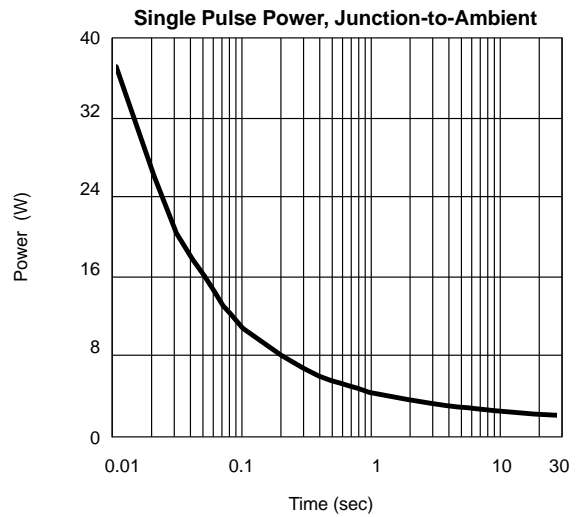
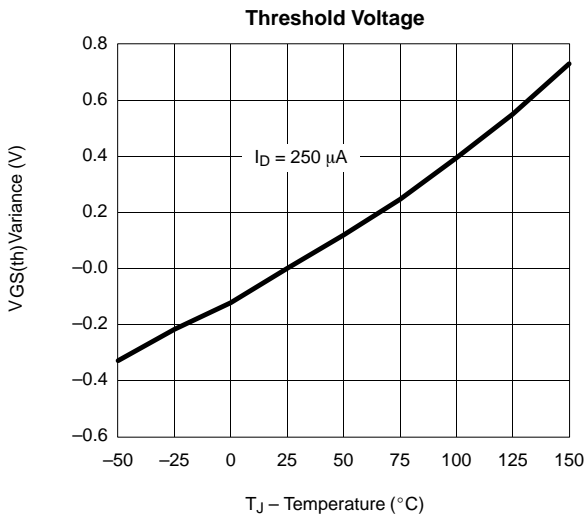
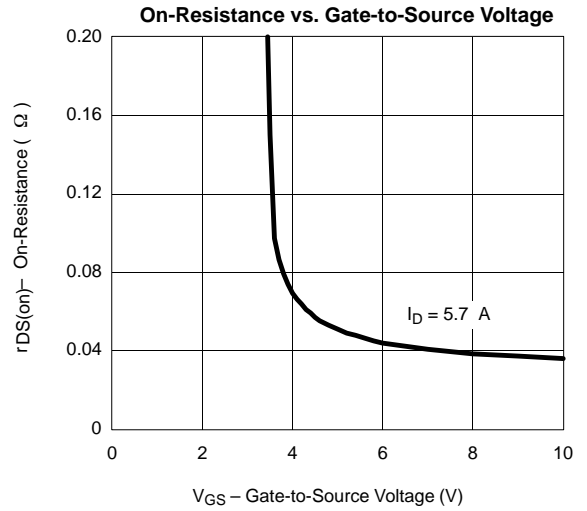
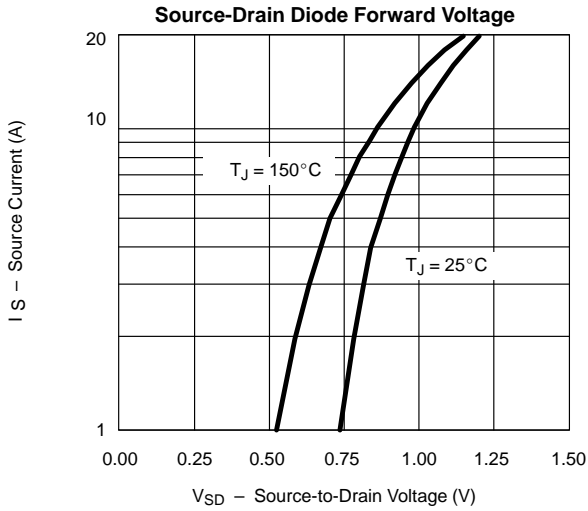
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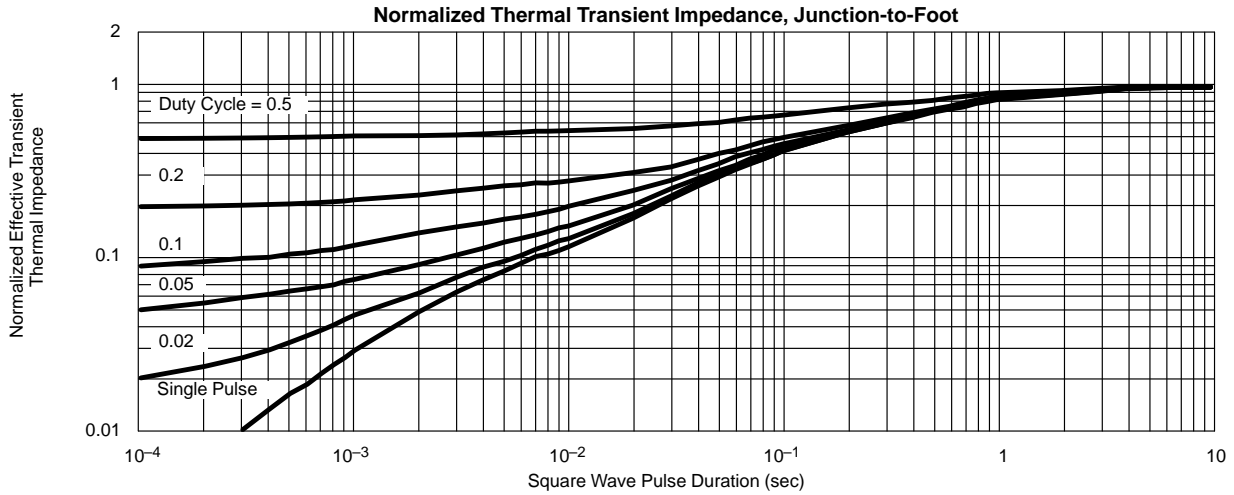


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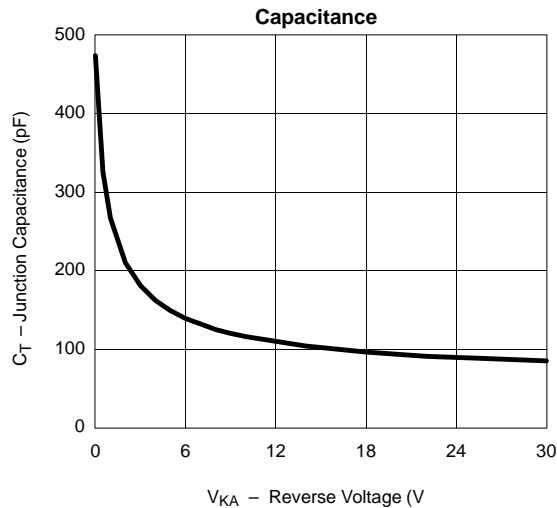
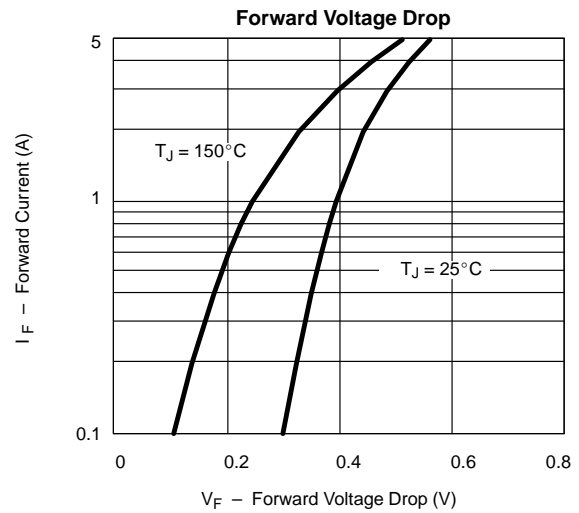
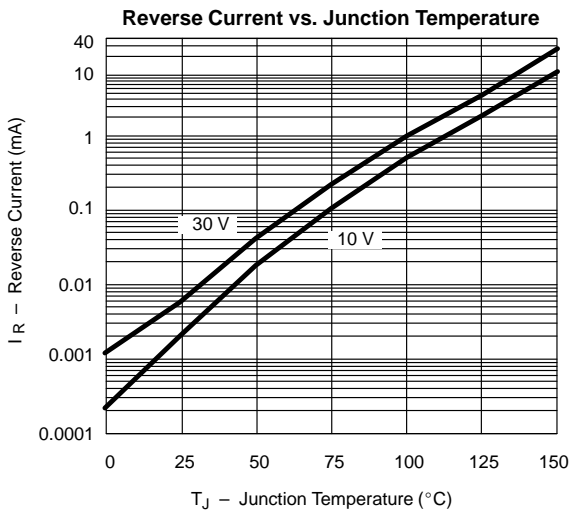
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SCHOTTKY





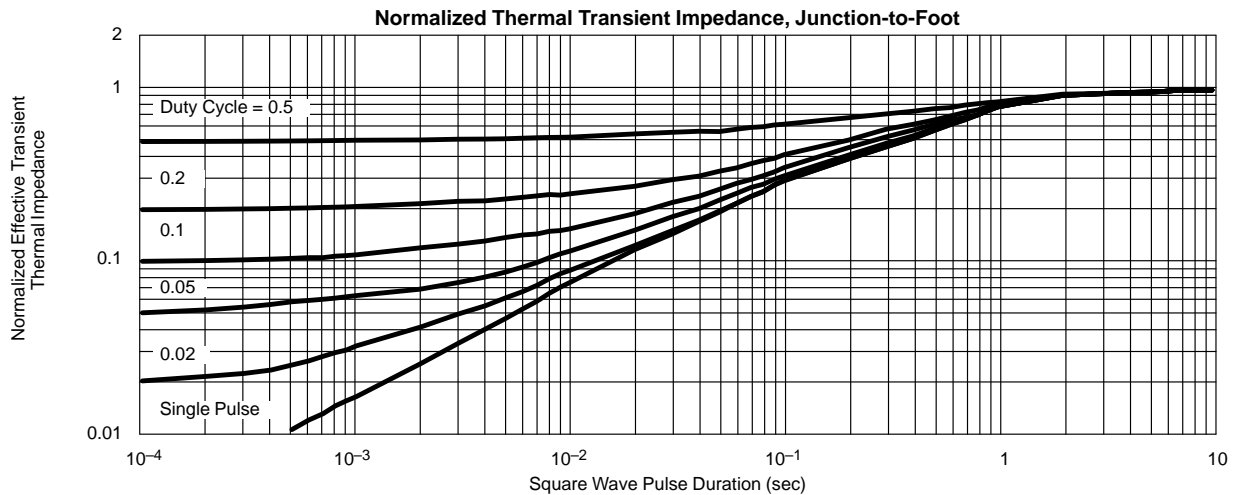
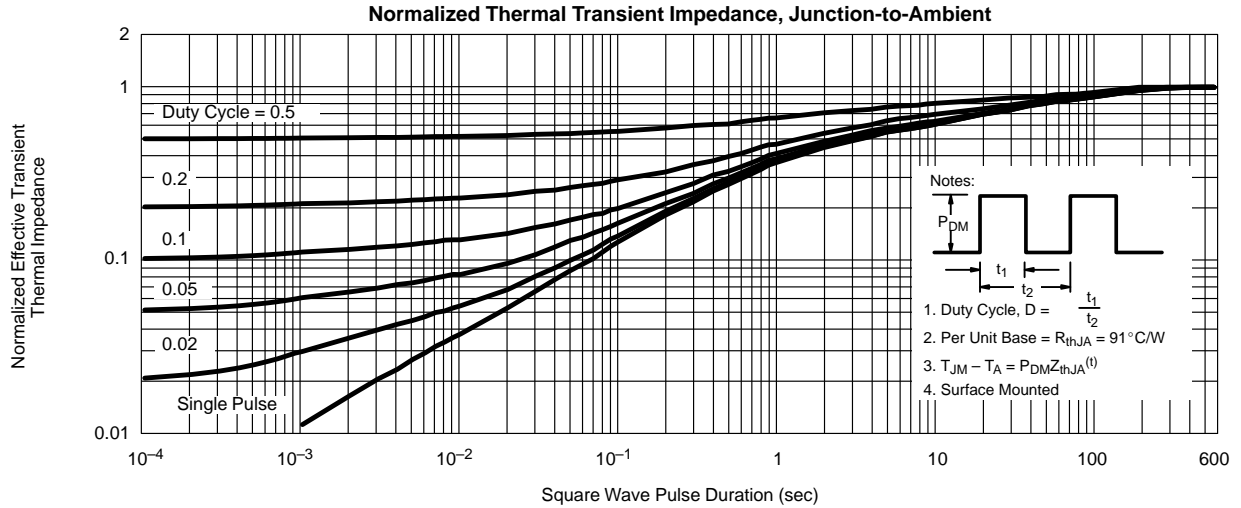
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SCHOTTKY





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