

SEMITRONICS CORP.

64 Commercial Street, Freeport, N.Y. 11520
Phone: (516) 623-9400 • Fax. (516) 623-6954

SES837

P-Channel MOSFET

FEATURES

- Non-Isolated Case
- Drain to Back of Case
- Hermetically Sealed Package
- Repetitive Avalanche Rating
- Dynamic dv/dt Rating
- MIL STX Screening Available

APPLICATIONS

- High Reliability Power Supplies
- Switch Mode Power Supplies
- Battery Back-Up Supplies
- High Speed Power Switching
- Inverters & Choppers

DESCRIPTION

The SES837 is a P-Mos Mosfet rated at -22 Amp, 200 volts, 0.26Ω packaged in a SMD hermetically sealed metallic package.
For MIL-PRF-19500 TX Military screening add STX suffix to part number (SES837STX)

Special Pin-Outs Available
Custom Lead Forming Available

PACKAGE



TO-257 SMD Version

CASE OUTLINE

See page 4 for complete outline

Absolute Maximum Ratings

| Parameter | Maximum | Units |
|--|-------------------|---------------|
| Continuous Drain Current I_p @ $T_c = 25^\circ C$, $V_{GS} @ -10V$ | -22* | A |
| Continuous Drain Current I_p @ $T_c = 100^\circ C$, $V_{GS} @ -10V$ | -14* | A |
| Pulse Drain Current I_{DM} | -44 ¹ | A |
| Power Dissipation P_D @ $T_c = 25^\circ C$ | 125 | W |
| Linear Derating Factor | 1.0 | W/ $^\circ C$ |
| Gate-to-Source Voltage V_{GS} | ± 20 | V |
| Peak Diode Recovery dv/dt | -5.0 ³ | V/ns |
| Operating & Storage Temperature T_j & T_{STG} | -55 to +150 | $^\circ C$ |

* Additional Doubling of Terminal Leads required

Static @ T_j = 25°C (unless otherwise specified)

| Parameter | Min. | Typ. | Max. | Units | Conditions |
|---|------|------|------|-------|--|
| Drain-to-Source Breakdown Voltage V _{(BR)DSS} | -200 | — | — | V | V _{GS} = 0V, I _D = -1.0mA |
| Temperature Coefficient of Breakdown Voltage $\Delta BV_{DSS}/\Delta T_J$ | — | -0.2 | — | V/°C | Reference to 25°C, I _D = -1.0mA |
| Static Drain to Source On-Resistance R _{DS(on)} | — | — | 0.27 | Ω | V _{GS} = -10V, I _D = -22A note ⁴ |
| Gate Threshold Voltage V _{GS(TH)} | -2.0 | — | -4.0 | V | V _{DS} = V _{GS} , I _D = -250uA |
| Zero Gate Voltage Drain Current I _{DSS} | — | — | -25 | uA | V _{DS} = 0.8 x Max rating, V _{GS} = 0V |
| | — | — | -250 | | V _{DS} = 0.8 x Max Rating, V _{GS} = 0V, T _J = 125°C |
| Gate-to-Source Forward Leakage I _{GSS} | — | — | -100 | nA | V _{GS} = -20V |
| Gate-to-Source Reverse Leakage I _{GSS} | — | — | 100 | | V _{GS} = 20V |

Dynamic @ T_j = 25°C (unless otherwise specified)

| Parameter | Min. | Typ. | Max. | Units | Conditions |
|---|------|------|------|-------|---|
| Forward Transconductance g _{fs} | 4.0 | — | — | S | V _{DS} = >-15V, I _{DS} = -14A note ⁴ |
| Total Gate Charge Q _g | — | — | 60 | nC | I _D = -14A V _{DS} = 0.5 x Max Rating V _{GS} = -10V |
| Gate-to-Source Charge Q _{gs} | — | — | 15 | | |
| Gate-to-Drain ("Miller") charge Q _{gd} | — | — | 38 | | |
| Turn-on-Delay Time t _{d(on)} | — | — | 35 | ns | V _{DD} = -200V I _D = -14A R _G = 9.1 Ohms V _{GS} = -10V |
| Rise Time t _r | — | — | 85 | | |
| Turn-Off-Delay Time t _{d(off)} | — | — | 85 | | |
| Fall time t _f | — | — | 65 | | |
| Input Capacitance C _{iss} | — | 2400 | — | pF | V _{GS} = 0V V _{DS} = -25V f = 1.0 MHz |
| Output Capacitance C _{oss} | — | 570 | — | | |
| Reverse Transfer Capacitance C _{rss} | — | 81 | — | | |
| Internal Drain Inductance L _D | — | 6.8 | — | nH | Measured from the center of the drain pad to the center of the source pad. |
| Internal Source Inductance L _S | — | 6.8 | — | | |

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Avalanche Characteristics

| Parameter | | Typ. | Max. | Units |
|-------------------------------|----------|------|-------------------|-------|
| Single Pulse Avalanche Energy | E_{AS} | — | 500 ² | mJ |
| Avalanche Current | I_{AR} | — | -11 ¹ | A |
| Repetitive Avalanche Energy | E_{AR} | — | 12.5 ¹ | mJ |

Thermal Resistance

| Parameter | | Typ. | Max. | Units |
|---------------------|-----------------|------|------|-------|
| Junction-to-case | $R_{\theta JC}$ | — | 1.0 | °C/W |
| Case-to-Sink | $R_{\theta CS}$ | 0.21 | — | |
| Junction-to-Ambient | $R_{\theta JA}$ | — | 48 | |

Diode Characteristics

| Parameter | | Min. | Typ. | Max. | Units | Conditions |
|---------------------------|----------|--------------------------------------|------|------------------|-------|--|
| Continuous Source Current | I_S | — | — | -22 | A | |
| Pulsed Source Current | I_{SM} | — | — | -88 ¹ | | |
| Diode Forward Voltage | V_{SD} | — | — | -4.6 | V | $T_j = 25^\circ\text{C}$, $I_S = -22\text{A}$, $V_{GS} = 0\text{V}$ ⁴ |
| Reverse Recovery Time | t_{rr} | — | — | 440 | ns | $T_j = 25^\circ\text{C}$, $I_F = -22\text{A}$ $di/dt \leq 100\text{A}/\mu\text{s}$ $V_{DD} = -50\text{V}$ note ⁴ |
| Reverse Recovery Charge | Q_{rr} | — | — | 7.2 | uC | |
| Forward Turn-on Time | t_{on} | Intrinsic turn-on time is negligible | | | | |

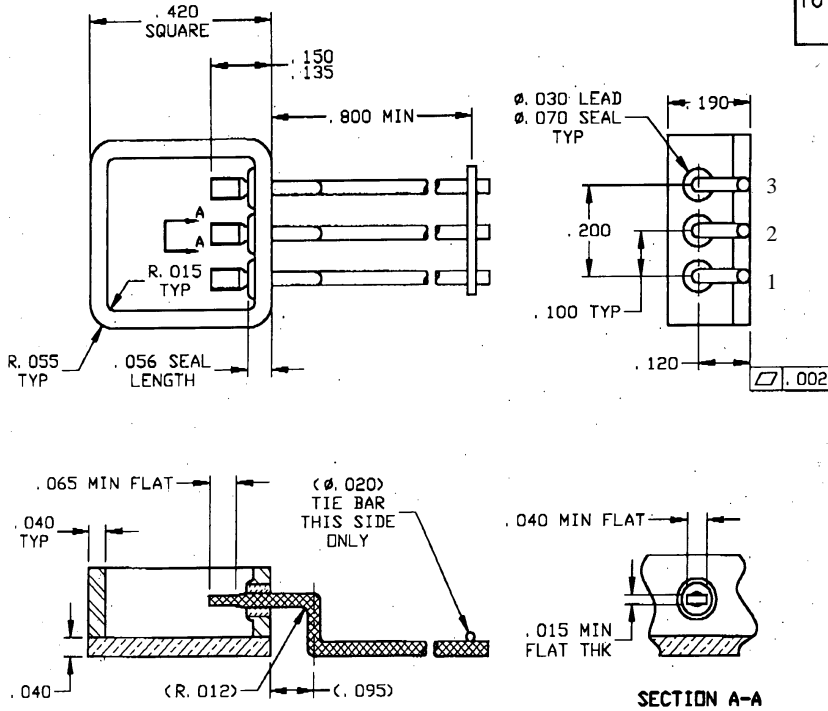
1. Repetitive Rating; Pulse width limited by maximum junction temperature. Doubling Terminal Leads required.
2. $V_{DD} = -25\text{V}$, starting $T_j = 25^\circ\text{C}$, $L = 8.3\text{mH}$ Peak $I_L = -22\text{A}$, $V_{GS} = -10\text{V}$
3. $I_S \leq -22\text{A}$, $di/dt \leq -150\text{A}/\mu\text{s}$, $V_{DD} \leq -200\text{V}$, $T_j \leq 150^\circ\text{C}$
4. Pulse width $\leq 300\mu\text{s}$; Duty Cycle $\leq 2\%$

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TO-257 Surface Mount Leadformed Package Outline

SEMITRONICS CORP.
 S-1402



- Terminals: Pin 1 = Source, Pin 2 = Gate, Pin 3 = Source
- Non-Isolated Case. Drain connected to back of case
- Base Material: OFHC, Oxygen Free High Conductivity Copper
- Terminal Leads are Copper Core 52 Alloy
- Isolation Seals are Glass

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