



BUZ12

SIPMOS[®] POWER TRANSISTORS

FEATURE

- Nchannel
- Enhancement mode
- Avalanche-rated
- TO-220 envelope
- Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | Value | Unit |
|--------------|---|-------------|------------------|
| V_{DS} | Drain-Source Voltage | 50 | V |
| I_D | Continuous Drain Current $T_C= 65^\circ\text{C}$ | 42 | A |
| I_{Dpuls} | Pulsed Drain Current $T_C= 25^\circ\text{C}$ | 168 | |
| I_{AR} | Avalanche Current, Limited by T_{imax} | 42 | |
| E_{AR} | Avalanche Energy, Periodic Limited by T_{imax} | 2.5 | mJ |
| E_{AS} | Avalanche Energy, Single pulse $I_D = 42 \text{ A}, V_{DD} = 25 \text{ V}, R_{GS} = 25 \Omega$ $L = 23.2 \mu\text{H}, T_j = 25^\circ\text{C}$ | 41 | |
| V_{GS} | Gate-Source Voltage | 20 | V |
| $R_{DS(on)}$ | Drain-Source on Resistance | 0.028 | Ω |
| P_T | Power Dissipation $T_C= 25^\circ\text{C}$ | 125 | W |
| t_j | Operating Temperature | -55 to +150 | $^\circ\text{C}$ |
| t_{stg} | Storage Temperature range | -55 to +150 | |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|------------|-------------------------------------|-------|------|
| R_{thJC} | Thermal Resistance, chip case | <1 | K/W |
| R_{thJA} | Thermal Resistance, chip to ambient | <75 | |

BUZ12

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|--------------|---------------------------------|---|-----|-------|-------|----------|
| V_{DSS} | Drain-Source Breakdown Voltage | $I_D = 250 \mu A, V_{GS} = 0 V$ | 50 | - | - | V |
| $V_{GS(th)}$ | Gate-threshold Voltage | $I_D = 1 mA, V_{GS} = V_{DS}$ | 2.1 | 3 | 4 | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS} = 50 V, V_{GS} = 0 V$ $T_j = 25 \text{ }^\circ C$ | - | 0.1 | 1 | μA |
| | | $V_{DS} = 50 V, V_{GS} = 0 V$ $T_j = 125 \text{ }^\circ C$ | - | 10 | 100 | |
| I_{GSS} | Gate-Source leakage Current | $V_{GS} = 20 V, V_{DS} = 0 V$ | - | 10 | 100 | nA |
| $R_{DS(on)}$ | Drain-Source on Resistance | $I_D = 32 A, V_{GS} = 10 V$ | - | 0.024 | 0.028 | Ω |

DYNAMIC CHARACTERISTICS

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|--------------|------------------------------|---|-----|------|------|---------|
| g_{fs} | Transconductance | $V_{DS} > 2 * I_D * R_{DS(on)max}$ $I_D = 32 A$ | 12 | 23 | - | S |
| C_{ISS} | Input Capacitance | $V_{GS} = 0 V, V_{DS} = 25 V$ $f = 1 MHz$ | - | 1700 | 2300 | μF |
| C_{OSS} | Output Capacitance | | - | 800 | 1200 | |
| C_{RSS} | Reverse transfer Capacitance | | - | 280 | 420 | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD} = 30 V, V_{GS} = 10 V$ $I_D = 3 A, R_{GS} = 50 \Omega$ | - | 35 | 50 | ns |
| t_r | Rise time | | - | 85 | 130 | |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 220 | 280 | |
| t_f | Fall Time | | - | 140 | 180 | |

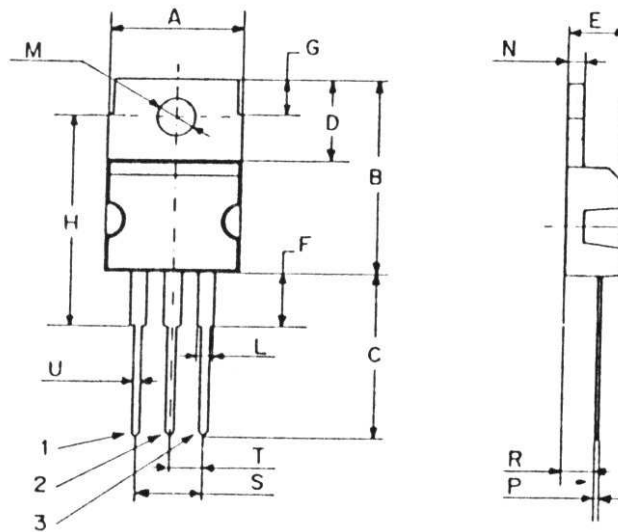
REVERSE DIODE

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|----------|---|--|-----|------|-----|---------|
| I_S | Inverse Diode Continuous Forward Current. | $T_C = 25 \text{ }^\circ C$ | - | - | 42 | A |
| I_{SM} | Inverse diode direct current, pulsed. | $T_C = 25 \text{ }^\circ C$ | - | - | 168 | |
| V_{SD} | Inverse Diode Forward voltage | $V_{GS} = 0 V, I_F = 84 A$ | - | 1.8 | 2.2 | V |
| T_{rr} | Reverse Recovery Time | $V_R = 30 V, I_F = I_S$ $di_F/dt = 100 A/\mu s$ | - | 80 | - | ns |
| Q_{rr} | Reverse Recovery Charge | | - | 0.14 | - | μC |

BUZ12

MECHANICAL DATA CASE TO-220

| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | Min. | Max. |
| A | 9,90 | 10,30 |
| B | 15,65 | 15,90 |
| C | 13,20 | 13,40 |
| D | 6,45 | 6,65 |
| E | 4,30 | 4,50 |
| F | 2,70 | 3,15 |
| G | 2,60 | 3,00 |
| H | 15,75 | 17,15 |
| L | 1,15 | 1,40 |
| M | 3,50 | 3,70 |
| N | - | 1,37 |
| P | 0,46 | 0,55 |
| R | 2,50 | 2,70 |
| S | 4,98 | 5,08 |
| T | 2,49 | 2,54 |
| U | 0,70 | 0,90 |



| | |
|---------|--------|
| Pin 1 : | Gate |
| Pin 2 : | Drain |
| Pin 3 : | Source |

Revised October 2014

Information furnished is believed to be accurate and reliable. However, Comset Semiconductors assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. Data are subject to change without notice. Comset Semiconductors makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Comset Semiconductors assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Comset Semiconductors' products are not authorized for use as critical components in life support devices or systems.