



## BUZ12

# SIPMOS<sup>®</sup> 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	$\Omega$
$P_T$	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	

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### 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	$V_{DS} = 50 V, V_{GS} = 0 V$ $T_j = 25^\circ C$	-	0.1	1	$\mu A$
		$V_{DS} = 50 V, V_{GS} = 0 V$ $T_j = 125^\circ C$	-	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	$\Omega$

### 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	$\mu F$
$C_{OSS}$	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	

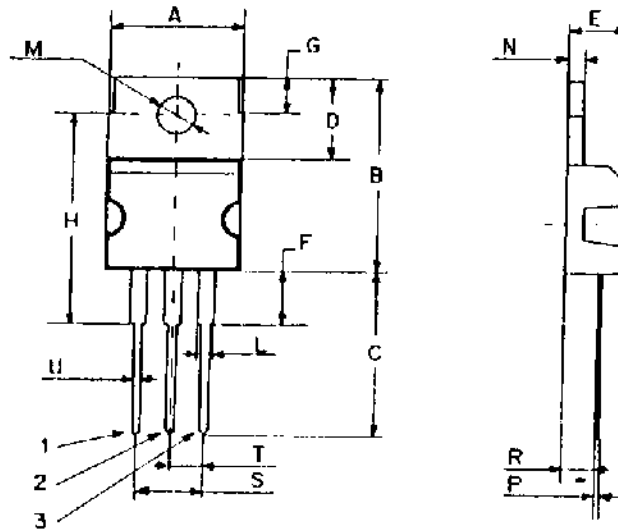
### REVERSE DIODE

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
$I_S$	Inverse Diode Continuous Forward Current.	$T_C = 25^\circ C$	-	-	42	A
$I_{SM}$	Inverse diode direct current, pulsed.	$T_C = 25^\circ C$	-	-	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	-	$\mu C$

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## 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

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