New Jersey Semi-Conductor Products, Inc.

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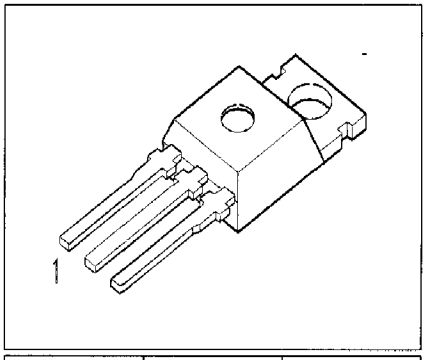
BUZ 41 A

- N channel
- Enhancement mode
- Avalanche-rated



Pin 1	Pin 2	Pin 3
G	D	S

Type	V_{DS}	I_D	$R_{DS(on)}$	Package
BUZ 41 A	500 V	4.5 A	1.5 Ω	TO-220 AB

Maximum Ratings

Parameter	Symbol	Values	Unit
Continuous drain current T_C = 36 °C	I_D	4.5	A
Pulsed drain current T_C = 25 °C	I_{Dpuls}	18	
Avalanche current,limited by T_{jmax}	I_{AR}	4.5	
Avalanche energy,periodic limited by T_{jmax}	E_{AR}	8	mJ
Avalanche energy, single pulse I_D = 4.5 A, V_{DD} = 50 V, R_{GS} = 25 Ω L = 28.4 mH, T_j = 25 °C	E_{AS}	320	
Gate source voltage	V_{GS}	± 20	V
Power dissipation T_C = 25 °C	P_{tot}	75	W
Operating temperature	T_j	-55 ... + 150	°C
Storage temperature	T_{stg}	-55 ... + 150	
Thermal resistance, chip case	R_{thJC}	≤ 1.67	K/W
Thermal resistance, chip to ambient	R_{thJA}	75	
DIN humidity category, DIN 40 040		E	
IEC climatic category, DIN IEC 68-1		55 / 150 / 56	

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Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain- source breakdown voltage V_{GS} = 0 V, I_D = 0.25 mA, T_j = 25 °C	$V_{(BR)DSS}$	500	-	-	V
Gate threshold voltage V_{GS}=V_{DS}, I_D = 1 mA	$V_{GS(th)}$	2.1	3	4	
Zero gate voltage drain current V_{DS} = 500 V, V_{GS} = 0 V, T_j = 25 °C V_{DS} = 500 V, V_{GS} = 0 V, T_j = 125 °C	I_{DSS}	- -	0.1 10	1 100	µA
Gate-source leakage current V_{GS} = 20 V, V_{DS} = 0 V	I_{GSS}	-	10	100	nA
Drain-Source on-resistance V_{GS} = 10 V, I_D = 3 A	$R_{DS(on)}$	-	1.3	1.5	Ω

Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance $V_{DS} \geq 2 * I_D * R_{DS(on)max}$, I_D = 3 A	g_{fs}	2.5	4.3	-	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	850	1300	pF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{oss}	-	100	150	
Reverse transfer capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{rss}	-	40	60	
Turn-on delay time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.6 A R_{GS} = 50 Ω	$t_{d(on)}$	-	15	20	ns
Rise time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.6 A R_{GS} = 50 Ω	t_r	-	50	70	
Turn-off delay time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.6 A R_{GS} = 50 Ω	$t_{d(off)}$	-	140	190	
Fall time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.6 A R_{GS} = 50 Ω	t_f	-	50	70	

Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse Diode					
Inverse diode continuous forward current T_C = 25 °C	I_S	-	-	4.5	A
Inverse diode direct current,pulsed T_C = 25 °C	I_{SM}	-	-	18	
Inverse diode forward voltage V_{GS} = 0 V, I_F = 9 A	V_{SD}	-	1	1.2	V
Reverse recovery time V_R = 100 V, I_F=I_S, di_F/dt = 100 A/µs	t_{rr}	-	350	-	ns
Reverse recovery charge V_R = 100 V, I_F=I_S, di_F/dt = 100 A/µs	Q_{rr}	-	3	-	µC