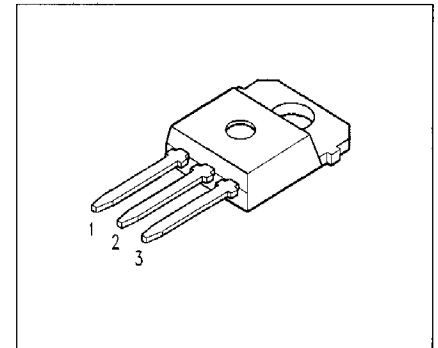


BUZ 385

- N channel
- Enhancement mode
- FREDFET



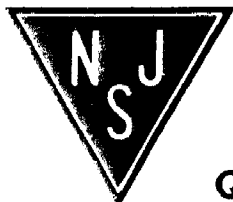
Pin 1	Pin 2	Pin 3
G	D	S

Type	V_{DS}	I_D	R_{DS(on)}	Package
BUZ 385	500 V	9 A	0.8 Ω	TO-218 AA

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain source voltage	V _{DS}	500	V
Drain-gate voltage	V _{DGR}	500	
R _{GS} = 20 kΩ			
Continuous drain current	I _D	9	A
T _C = 25 °C			
Pulsed drain current	I _{Dpuls}	36	
T _C = 25 °C			
Gate source voltage	V _{GS}	± 20	V
Power dissipation	P _{tot}	125	W
T _C = 25 °C			
Operating temperature	T _j	-55 ... + 150	°C
Storage temperature	T _{stg}	-55 ... + 150	
Thermal resistance, chip case	R _{thJC}	≤ 1	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	

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain- source breakdown voltage $V_{GS} = 0\text{ V}$, $I_D = 0.25\text{ mA}$, $T_j = 25^\circ\text{C}$	$V_{(BR)DSS}$	500	-	-	V
Gate threshold voltage $V_{GS} = V_{DS}$, $I_D = 1\text{ mA}$	$V_{GS(th)}$	2.1	3.5	4	
Zero gate voltage drain current $V_{DS} = 500\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = 25^\circ\text{C}$ $V_{DS} = 500\text{ V}$, $V_{GS} = 0\text{ V}$, $T_j = 125^\circ\text{C}$	I_{DSS}	-	20 100	250 1000	μA
Gate-source leakage current $V_{GS} = 20\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	-	10	100	nA
Drain-Source on-resistance $V_{GS} = 10\text{ V}$, $I_D = 6.5\text{ A}$	$R_{DS(on)}$	-	0.6	0.8	Ω

Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance $V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$, $I_D = 6.5 \text{ A}$	g_{fs}	2.7	6.7	-	S
Input capacitance $V_{GS} = 0 \text{ V}$, $V_{DS} = 25 \text{ V}$, $f = 1 \text{ MHz}$	C_{iss}	-	3800	4900	pF
Output capacitance $V_{GS} = 0 \text{ V}$, $V_{DS} = 25 \text{ V}$, $f = 1 \text{ MHz}$	C_{oss}	-	250	400	
Reverse transfer capacitance $V_{GS} = 0 \text{ V}$, $V_{DS} = 25 \text{ V}$, $f = 1 \text{ MHz}$	C_{rss}	-	100	170	
Turn-on delay time $V_{DD} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 2.8 \text{ A}$ $R_{GS} = 50 \Omega$	$t_{d(on)}$	-	50	75	ns
Rise time $V_{DD} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 2.8 \text{ A}$ $R_{GS} = 50 \Omega$	t_r	-	80	120	
Turn-off delay time $V_{DD} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 2.8 \text{ A}$ $R_{GS} = 50 \Omega$	$t_{d(off)}$	-	330	430	
Fall time $V_{DD} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 2.8 \text{ A}$ $R_{GS} = 50 \Omega$	t_f	-	110	140	

Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse Diode					
Inverse diode continuous forward current $T_C = 25^\circ\text{C}$	I_S	-	-	9	A
Inverse diode direct current, pulsed $T_C = 25^\circ\text{C}$	I_{SM}	-	-	36	
Inverse diode forward voltage $V_{GS} = 0\text{ V}, I_F = 21\text{ A}$	V_{SD}	-	1.3	1.7	V
Reverse recovery time $V_R = 100\text{ V}, I_F = I_S, di_F/dt = 100\text{ A}/\mu\text{s}$	t_{rr}	-	180	250	ns
Reverse recovery charge $V_R = 100\text{ V}, I_F = I_S, di_F/dt = 100\text{ A}/\mu\text{s}$	Q_{rr}	-	0.65	1.2	μC