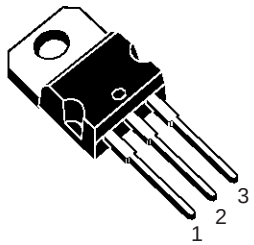
BUZ71A

N - CHANNEL 50V - 0.1Ω - 13A TO-220
STripFET™ POWER MOSFET

TYPE	V_{DSS}	$R_{DS(on)}$	I_D
BUZ71A	50 V	< 0.12 Ω	13 A

- TYPICAL $R_{DS(on)}$ = 0.1 Ω
- AVALANCHE RUGGED TECHNOLOGY
- 100% AVALANCHE TESTED
- HIGH CURRENT CAPABILITY
- 175°C OPERATING TEMPERATURE

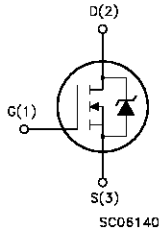


TO-220

APPLICATIONS

- HIGH CURRENT, HIGH SPEED SWITCHING
- SOLENOID AND RELAY DRIVERS
- REGULATORS
- DC-DC & DC-AC CONVERTERS
- MOTOR CONTROL, AUDIO AMPLIFIERS
- AUTOMOTIVE ENVIRONMENT (INJECTION, ABS, AIR-BAG, LAMPDRIVERS, Etc.)

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{DS}	Drain-source Voltage (V_{GS} = 0)	50	V
V_{DGR}	Drain- gate Voltage (R_{GS} = 20 kΩ)	50	V
V_{GS}	Gate-source Voltage	± 20	V
I_D	Drain Current (continuous) at T_c = 25 °C	13	A
I_{DM}	Drain Current (pulsed)	52	A
P_{tot}	Total Dissipation at T_c = 25 °C	40	W
T_{stg}	Storage Temperature	-65 to 175	°C
T_j	Max. Operating Junction Temperature	175	°C
	DIN HUMIDITY CATEGORY (DIN 40040)	E	
	IEC CLIMATIC CATEGORY (DIN IEC 68-1)	55/150/56	

First digit of the datecode being Z or K identifies silicon characterized in this datasheet.

THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	3.75	$^oC/W$
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	62.5	$^oC/W$

AVALANCHE CHARACTERISTICS

Symbol	Parameter	Value	Unit
I_{AR}	Avalanche Current, Repetitive or Not-Repetitive (pulse width limited by T_j max)	14	A
E_{AS}	Single Pulse Avalanche Energy (starting T_j = 25 ^oC, $I_D = I_{AR}$, V_{DD} = 25 V)	50	mJ

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

OFF

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source Breakdown Voltage	I_D = 250 µA V_{GS} = 0	50			V
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0)	V_{DS} = Max Rating V_{DS} = Max Rating T_j = 125 ^oC			1 10	µA µA
I_{GSS}	Gate-body Leakage Current (V_{DS} = 0)	V_{GS} = ± 20 V			± 100	nA

ON (∗)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ I_D = 1 mA	2.1	3	4	V
$R_{DS(on)}$	Static Drain-source On Resistance	V_{GS} = 10 V I_D = 9 A		0.1	0.12	Ω

DYNAMIC

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
g_{fs} (∗)	Forward Transconductance	V_{DS} = 25 V I_D = 9 A	4	7.7		S
C_{iss} C_{oss} C_{rss}	Input Capacitance Output Capacitance Reverse Transfer Capacitance	V_{DS} = 25 V f = 1 MHz V_{GS} = 0		760 100 30		pF pF pF

SWITCHING

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	Turn-on Time Rise Time Turn-off Delay Time Fall Time	V_{DD} = 30 V I_D = 8 A R_{GS} = 50 Ω V_{GS} = 10 V		20 65 70 35		ns ns ns ns

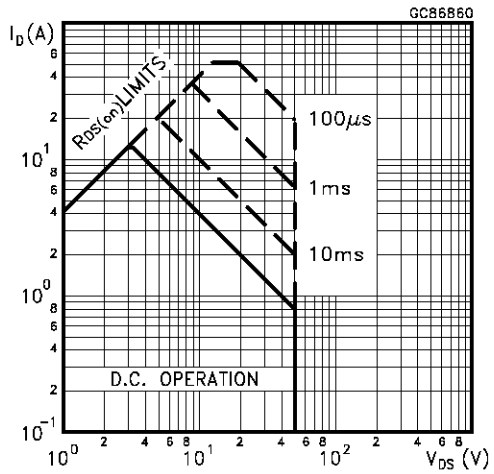
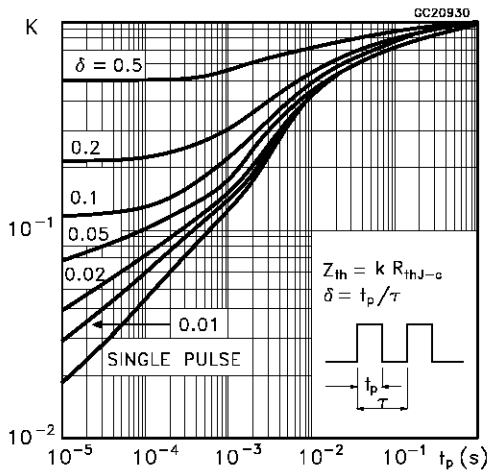
ELECTRICAL CHARACTERISTICS (continued)

SOURCE DRAIN DIODE

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{SD} I_{SDM}	Source-drain Current Source-drain Current (pulsed)				13 52	A A
V_{SD} (*)	Forward On Voltage	I_{SD} = 28 A V_{GS} = 0			1.8	V
t_{rr} Q_{rr}	Reverse Recovery Time Reverse Recovery Charge	I_{SD} = 14 A di/dt = 100 A/µs V_{DD} = 30 V T_j = 150 °C		65 0.17		ns µC

(*) Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %

Safe Operating Area



Thermal Impedance