

BUZ10

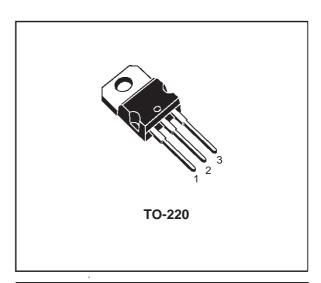
N - CHANNEL 50V - 0.06Ω - 23A TO-220 STripFETTM MOSFET

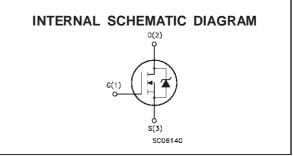
TYPE	V _{DSS}	R _{DS(on)}	ID
BUZ10	50 V	< 0.07 Ω	23 A

- TYPICAL $R_{DS(on)} = 0.06 \Omega$
- AVALANCHE RUGGED TECHNOLOGY
- 100% AVALANCHE TESTED
- HIGH CURRENT CAPABILITY
- 175°C OPERATING TEMPERATURE

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.)





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 k Ω)	50	V
V _{GS}	Gate-source Voltage	± 20	V
I _D	Drain Current (continuous) at T _c = 25 °C	23	Α
I _{DM}	Drain Current (pulsed)	92	Α
P _{tot}	Total Dissipation at T _c = 25 °C	75	W
T _{stg}	Storage Temperature	-65 to 175	°C
Tj	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.

February 2000 1/8

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	2.0	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient	Max	62.5	°C/W

AVALANCHE CHARACTERISTICS

Symbol	Parameter	Value	Unit
I _{AR}	Avalanche Current, Repetitive or Not-Repetitive (pulse width limited by T_j max, $\delta < 1\%$)	10	А
E _{AS}	Single Pulse Avalanche Energy (starting $T_j = 25$ °C, $I_D = I_{AR}$, $V_{DD} = 30$ V)	150	mJ

ELECTRICAL CHARACTERISTICS ($T_{case} = 25$ ^{o}C unless otherwise specified)

OFF

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
V _{(BR)DSS}	Drain-source Breakdown Voltage	$I_D = 250 \ \mu A$ $V_{GS} = 0$	50			V
I _{DSS}	Zero Gate Voltage Drain Current (V _{GS} = 0)	$V_{DS} = Max Rating$ $V_{DS} = Max Rating$ $T_j = 125 ^{\circ}C$			1 10	μΑ μΑ
I _{GSS}	Gate-body Leakage Current (V _{DS} = 0)	$V_{GS} = \pm 20 \text{ V}$			± 100	nA

ON (*)

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
V _{GS(th)}	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 1 \text{ mA}$	2.1	3	4	V
R _{DS(on)}	Static Drain-source On Resistance	V _{GS} = 10V I _D = 14 A		0.06	0.07	Ω

DYNAMIC

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
gfs (*)	Forward Transconductance	V _{DS} = 25 V I _D = 14 A	6	11		S
C _{iss} C _{oss} C _{rss}	Input Capacitance Output Capacitance Reverse Transfer Capacitance	$V_{DS} = 25 \text{ V}$ f = 1 MHz $V_{GS} = 0$		900 130 40		pF pF pF

SWITCHING

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
t _{d(on)}	Turn-on Time	$V_{DD} = 30 \text{ V}$ $I_{D} = 10 \text{ A}$		20		ns
t _r	Rise Time	$R_{GS} = 4.7 \Omega$ $V_{GS} = 10 V$		45		ns
$t_{d(off)} \ t_{f}$	Turn-off Delay Time Fall Time			48 10		ns ns

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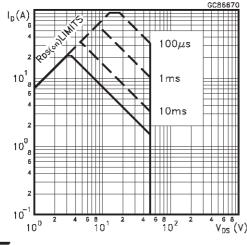
ELECTRICAL CHARACTERISTICS (continued)

SOURCE DRAIN DIODE

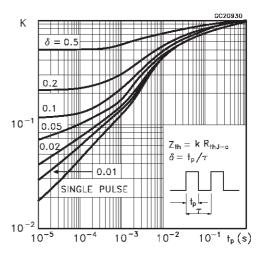
Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
I _{SD} I _{SDM}	Source-drain Current Source-drain Current (pulsed)				23 92	A A
V _{SD} (*)	Forward On Voltage	I _{SD} = 46 A V _{GS} = 0			1.9	V
t _{rr}	Reverse Recovery Time	$I_{SD} = 23 \text{ A}$ di/dt = 100 A/ μ s $V_{DD} = 30 \text{ V}$ $T_i = 150 ^{\circ}\text{C}$		50		ns
Qrr	Reverse Recovery Charge	,		0.17		μС

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

Safe Operating Area

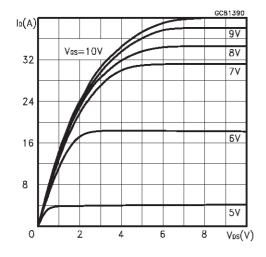


Thermal Impedance

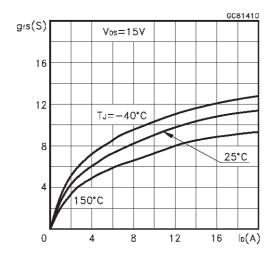


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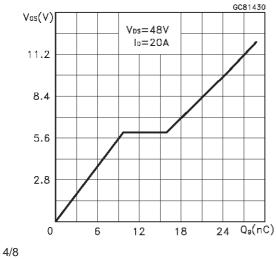
Output Characteristics



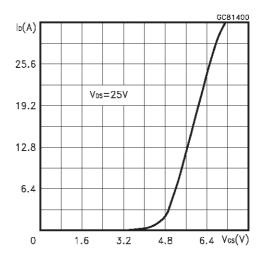
Transconductance



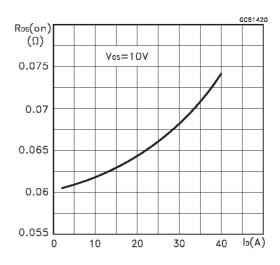
Gate Charge vs Gate-source Voltage



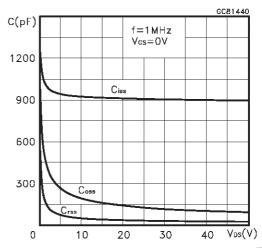
Transfer Characteristics



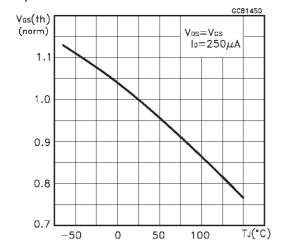
Static Drain-source On Resistance



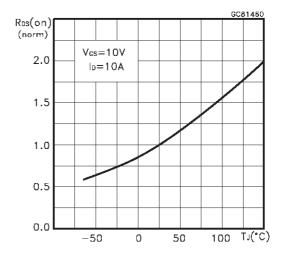
Capacitance Variations



Normalized Gate Threshold Voltage vs Temperature



Normalized On Resistance vs Temperature



Source-drain Diode Forward Characteristics

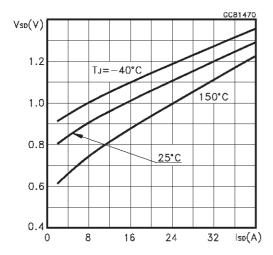


Fig. 1: Unclamped Inductive Load Test Circuit

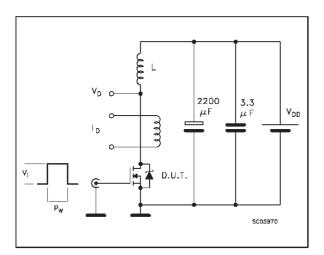


Fig. 3: Switching Times Test Circuits For Resistive Load

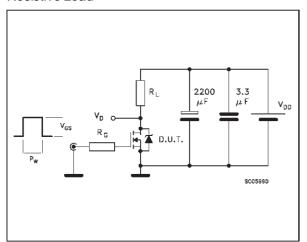


Fig. 5: Test Circuit For Inductive Load Switching And Diode Recovery Times

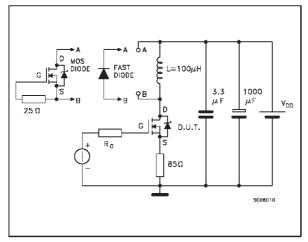


Fig. 2: Unclamped Inductive Waveform

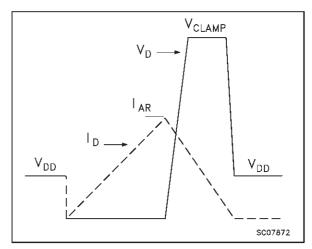
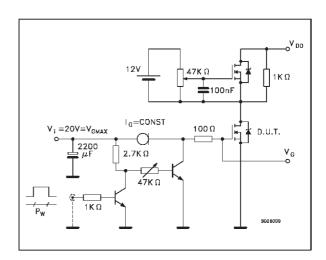


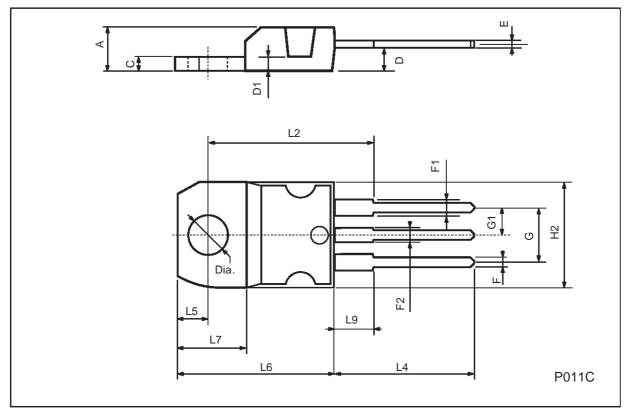
Fig. 4: Gate Charge test Circuit



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TO-220 MECHANICAL DATA

DIM.		mm			inch	
Dilvi.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
А	4.40		4.60	0.173		0.181
С	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



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