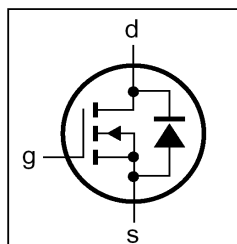


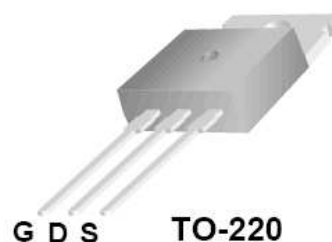
- **Avalanche Energy Specified**
- **Fast Switching**
- **Simple Drive Requirements**



BV_{DSS}	200V
$R_{DS(ON)}$	0.18Ω
I_D	18A

Description

This advanced low voltage MOSFET is produced using Belling's proprietary MOS technology. Designed for high efficiency switch mode power supply.



Absolute Maximum Ratings ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Continuous Drain Current	18	A
	Continuous Drain Current ($T_c=100^{\circ}\text{C}$)	11	A
I_{DM}	Drain Current (pulsed) (Note 1)	72	A
P_D	Power Dissipation	125	W
	Linear Derating Factor	1.0	W/ $^{\circ}\text{C}$
E_{AS}	Single Pulsed Avalanche Energy (Note2)	580	mJ
I_{AR}	Avalanche Current	18	A
E_{AR}	Repetitive Avalanche Energy	13	mJ
T_j	Operating Junction Temperature Range	-55 to +150	$^{\circ}\text{C}$
T_{SDG}	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{th\ j-c}$	Thermal Resistance, Junction to case Max.	0.5	$^{\circ}\text{C}/\text{W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient Max.	62.5	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	200	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=11A$	-	-	0.18	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	-	4	V
g_{fs}	Forward Transconductance(note3)	$V_{DS}=15V, I_D=11A$	6.7	-	-	S
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=200V, V_{GS}=0V$	-	-	1	μA
	Drain-Source Leakage Current $T_C=125^\circ\text{C}$	$V_{DS}=160V, V_{GS}=0V$	-	-	50	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 30V$	-	-	± 100	nA
Q_g	Total Gate Charge	$V_{DD}=160V$ $I_D=18A$ $V_{GS}=10V$ Note3	-	35.7	70	nC
Q_{gs}	Gate-Source Charge		-	6.7	13	nC
Q_{gd}	Gate-Drain Charge		-	17.5	39	nC
$t_{(on)}$	Turn-on Delay Time	$V_{DD}=100V$ $I_D=18A$ $R_G=25\Omega$ Note3	-	40	-	ns
t_r	Turn-on Rise Time		-	132	-	ns
$t_{(off)}$	Turn-off Delay Time		-	93	-	ns
t_f	Turn-off Fall Time		-	31	-	ns
C_{iss}	Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f = 1\text{MHz}$	-	1312	-	pF
C_{oss}	Output Capacitance		-	159	-	pF
C_{rss}	Reverse Transfer Capacitance		-	38	-	pF

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_S	Continuous Source Diode Forward Current		-	-	18	A
I_{SM}	Pulsed Source Diode Forward Current (note1)		-	-	72	A
V_{SD}	Forward On Voltage	$V_{GS}=0V, I_S=18A$	-	-	2.0	V
t_{rr}	Reverse Recovery Time	$V_{GS}=0V, I_S=180A$ $dI_F/dt = 100A/\mu s$	-	300	600	ns
Q_{rr}	Reverse Recovery Charge		-	3.4	7.1	μC

Note:

- (1) Repetitive Rating: Pulse width limited by maximum junction temperature
- (2) $V_{DD}=50V, L=2.7mH, I_{AS}=18A, R_G=25\Omega$, starting $T_J=25^\circ\text{C}$
- (3) Pulse width $\leq 300 \mu s$; duty cycle $\leq 2\%$

Typical Characteristics

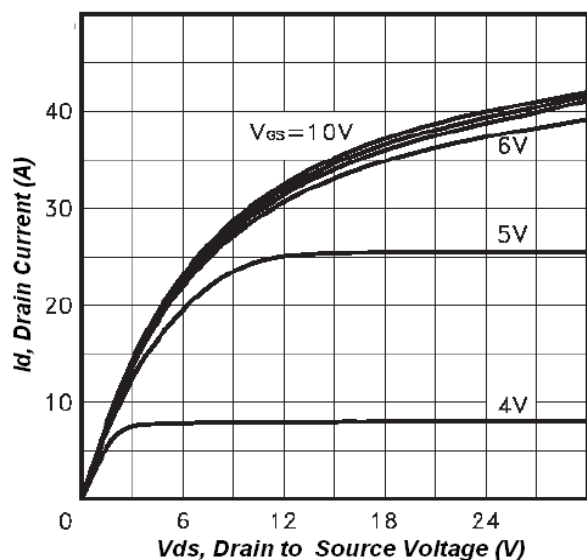


Fig 1. Typical Output Characteristics

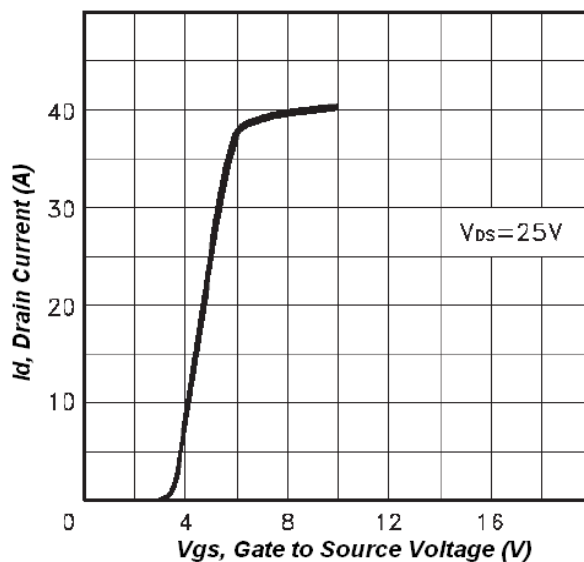


Fig 2. Transfer Characteristics

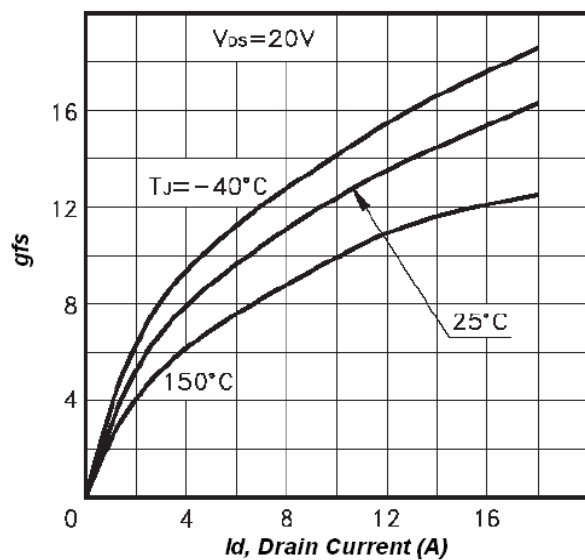


Fig 3. Transconductance

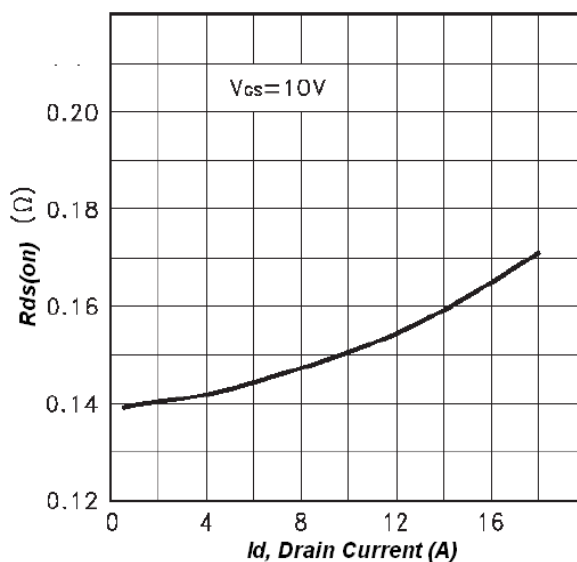


Fig 4. On-Resistance vs. Drain Current

Typical Characteristics (continued)

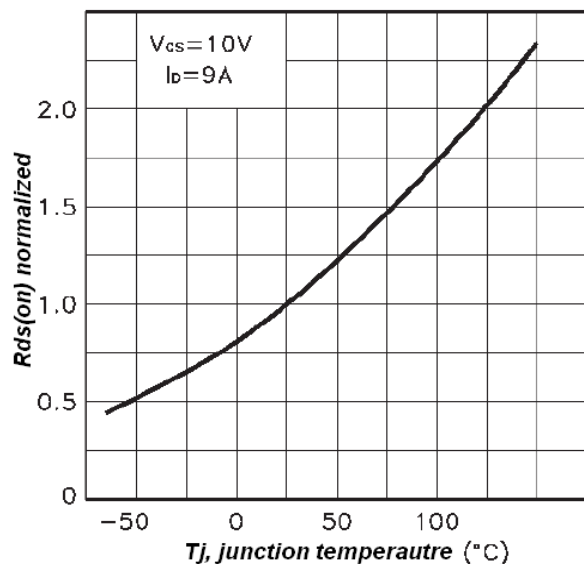


Fig 5. On-Resistance vs. Junction Temperature

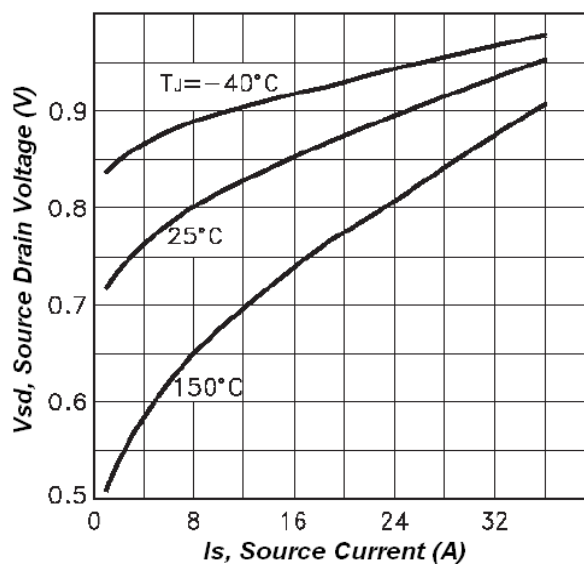


Fig 6. Body Diode Forward Voltage

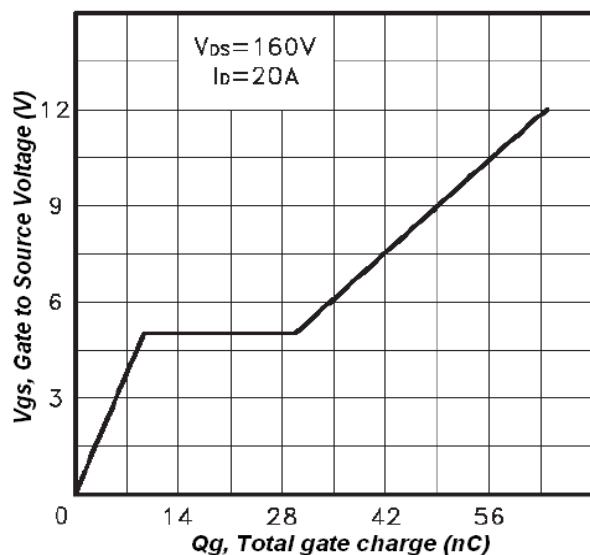


Fig 7. Gate Charge Characteristics

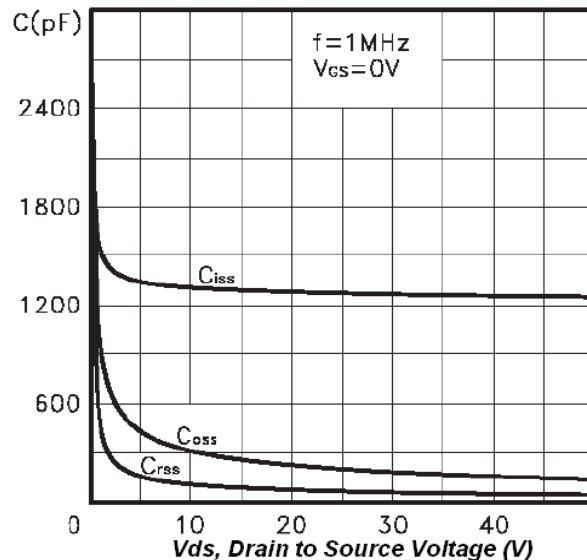


Fig 8. Capacitance Characteristics

Typical Characteristics (continued)

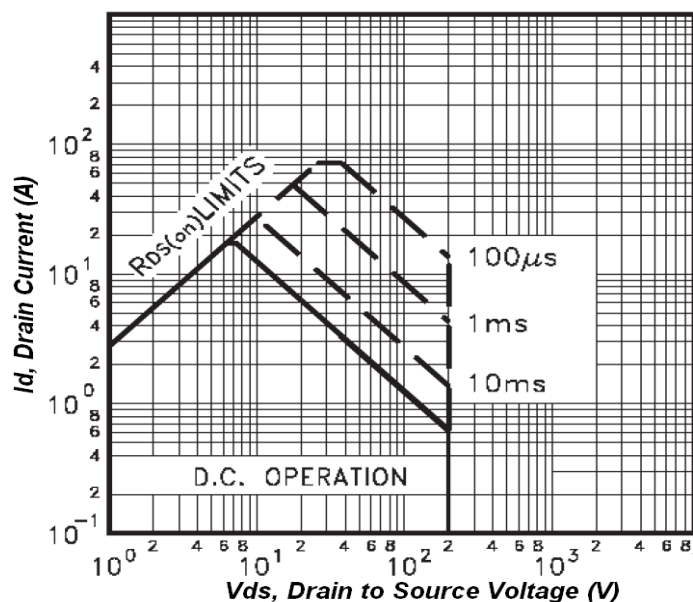


Fig 9. Maximum Safe Operating Area

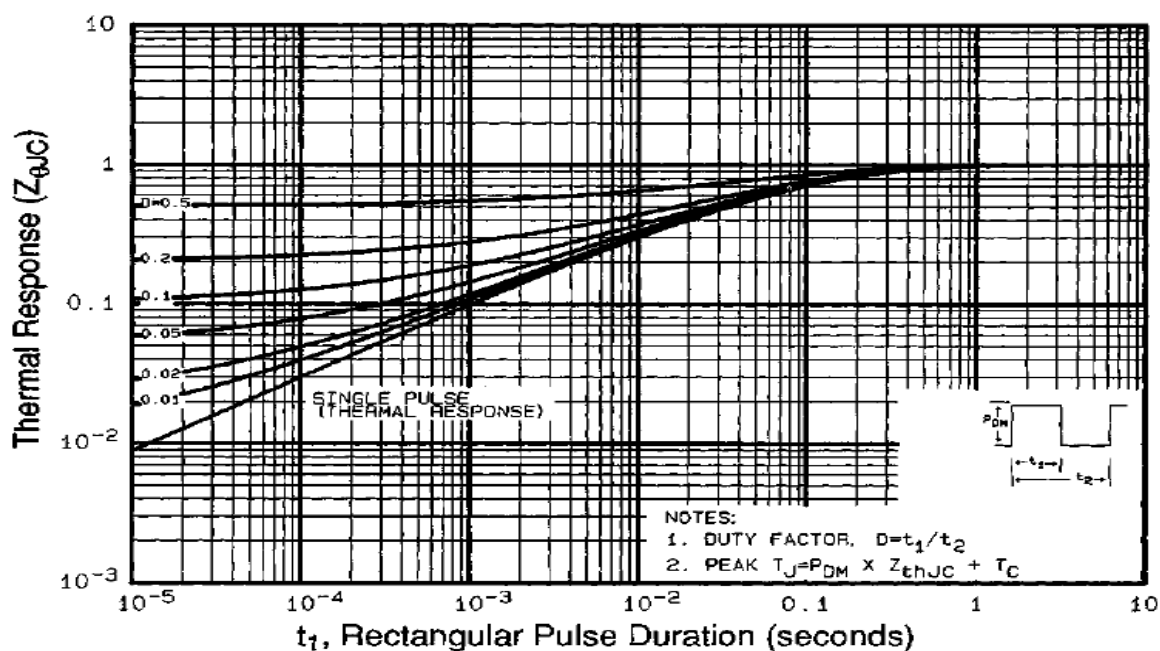


Fig 10. Transient Thermal Response Curve

Test Circuit and Waveform

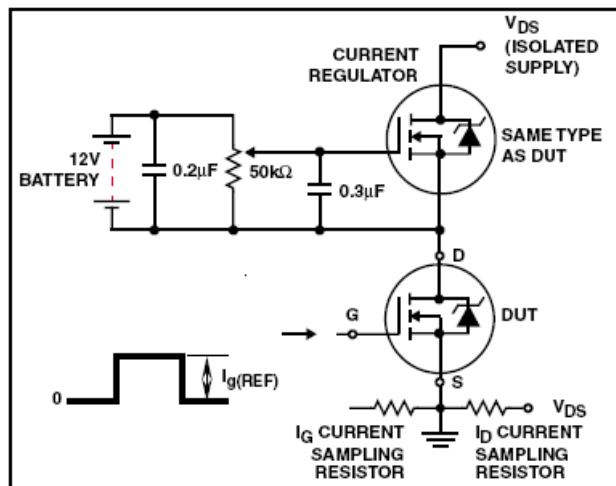


Fig 11. Gate Charge Circuit

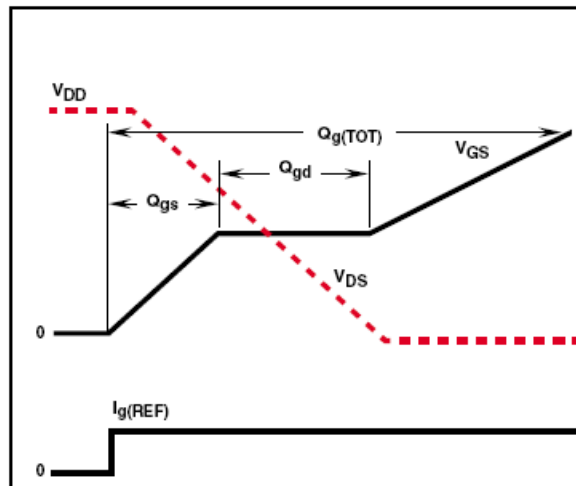


Fig 12. Gate Charge Waveform

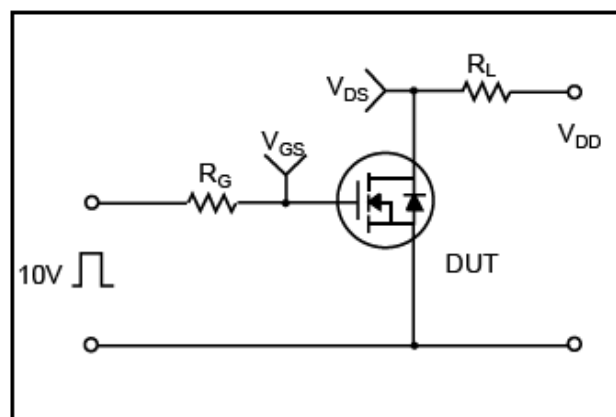


Fig 13. Switching Time Circuit

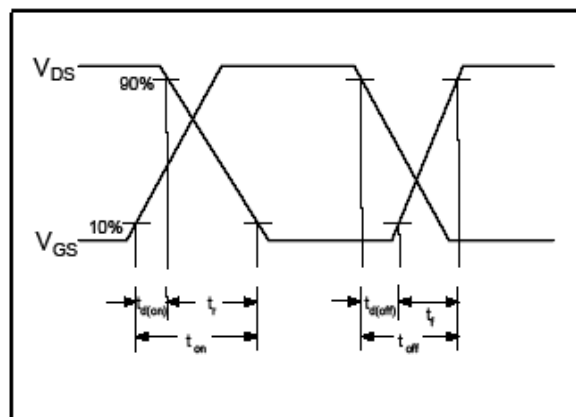


Fig 14. Switching Time Waveform

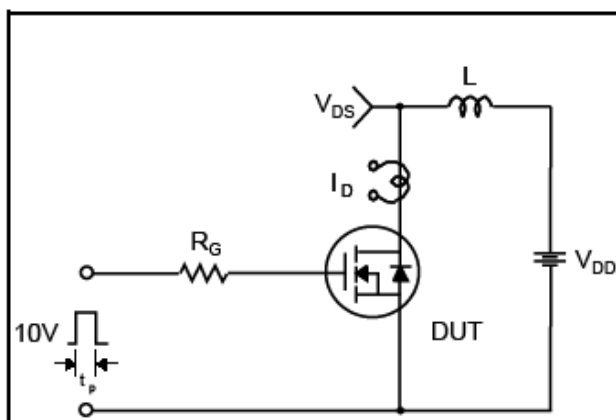


Fig 15. Unclamped Inductive Switching Test Circuit

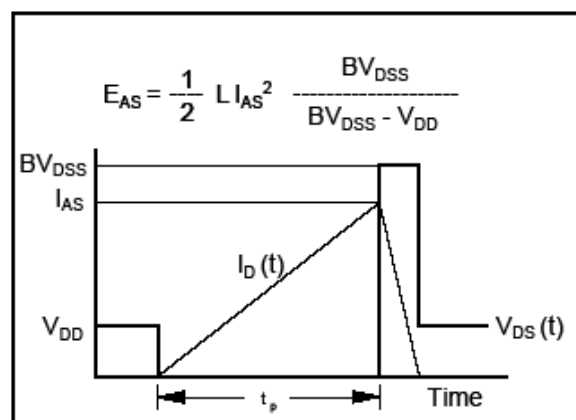


Fig 16. Unclamped Inductive Switching Waveforms