ST36N06

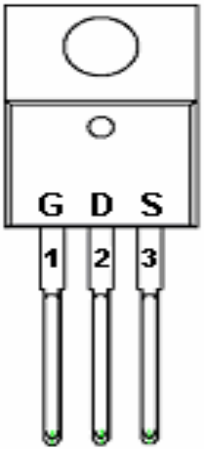
N Channel Enhancement Mode MOSFET

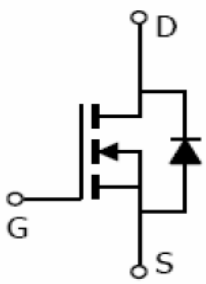
36.0A

DESCRIPTION

ST36N06 is used trench technology to provide excellent RDS(on) and gate charge. Those devices are suitable for use as load switch or in PWM applications.

PIN CONFIGURATION
TO220-3L





FEATURE

- 60V/20.0A, $R_{DS(ON)}$ = 30mΩ (Typ.) @V_{GS} = 10V
- 60V/20.0A, $R_{DS(ON)}$ = 45mΩ @V_{GS} = 4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TO-220 package design

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ABSOULTE MAXIMUM RATINGS (Ta = 25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		VDSS	60	V
Gate-Source Voltage		VGSS	±20	V
Continuous Drain Current (TJ=150℃)	TA=25℃ TA=70℃	ID	36.0 26.0	A
Pulsed Drain Current		IDM	60	A
Avalanche Current		IAS	70	A
Power Dissipation	TA=25℃	PD	62.5	W
Operation Junction Temperature		TJ	175	℃
Storgae Temperature Range		TSTG	-55/175	℃
Thermal Resistance-Junction to Ambient		RθJA	62	℃/W

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ELECTRICAL CHARACTERISTICS (Ta = 25℃ Unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,ID=250uA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},ID=250uA	1		3	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V,V_{GS}=0V			1	uA
		V_{DS}=48V,V_{GS}=0V T_J=55℃			5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧5V,V_{GS}=10V	60			A
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=20A V_{GS}=4.5V,I_D=20A		30 45	37 55	mΩ
Forward Transconductance	gfs	V_{DS}=5V,I_D=20A		65		S
Diode Forward Voltage	V_{SD}	I_S=1.0A,V_{GS}=0V		0.7	1.0	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=10V,V_{DS}=30V I_D≡20A			20	nC
Gate-Source Charge	Q_{gs}				7	
Gate-Drain Charge	Q_{gd}				9	
Input Capacitance	C_{iss}	V_{DS} =20V,VGS=0V F=1MHz		1080		pF
Output Capacitance	C_{oss}			160		
Reverse TransferCapacitance	C_{rss}			58		
Turn-On Time	$t_{d(on)}$ tr	V_{DD}=20V,R_L= 4Ω I_D=5.0A,V_{GEN}=10V R_G=1Ω		20		nS
				25		
Turn-Off Time	$t_{d(off)}$ tf			40		
				42		

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TYPICAL CHARACTERICTICS

Figure 1. Safe operating area

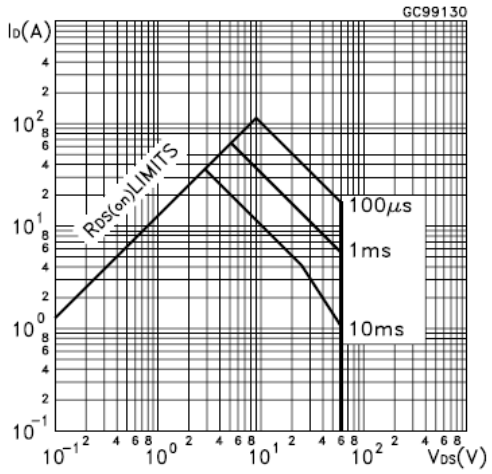

Figure 2. Thermal impedance

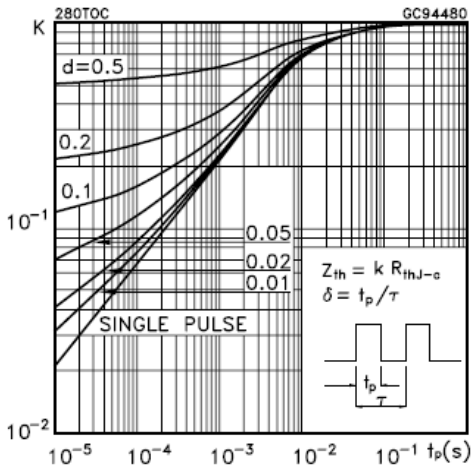

Figure 3. Output chatacterisitcs

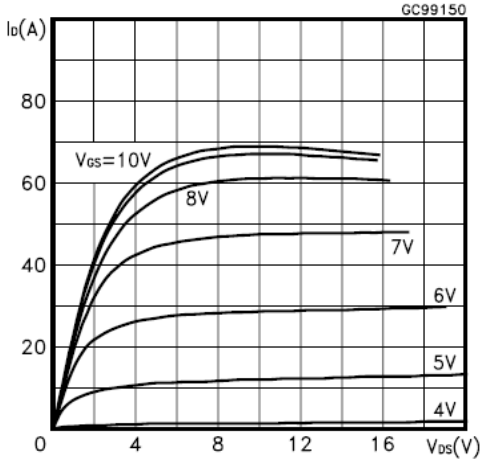

Figure 4. Transfer characteristics

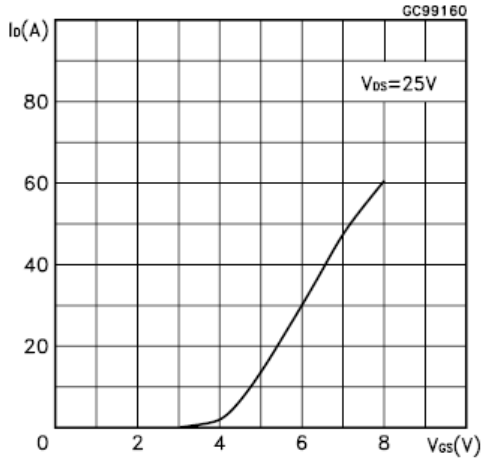

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Figure 5. Transconductance

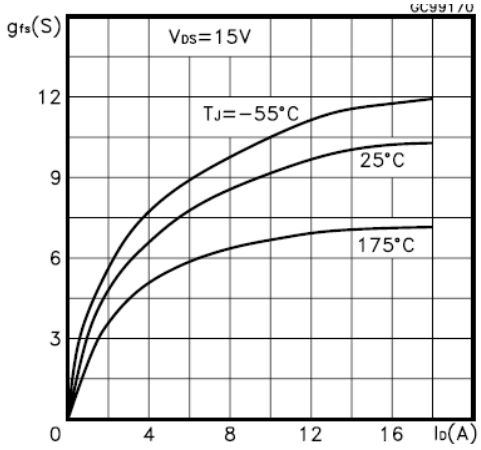

Figure 6. Staic drain-source on resstance

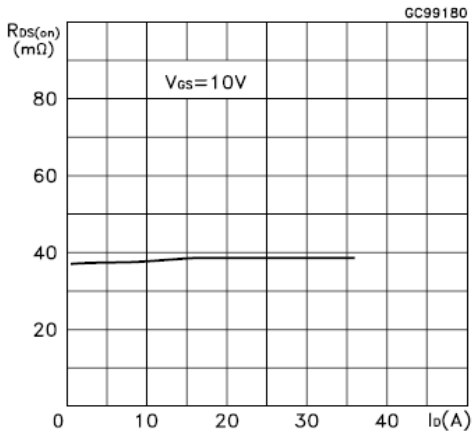

Figure 7. Gate charge vs. Gate-source valtage

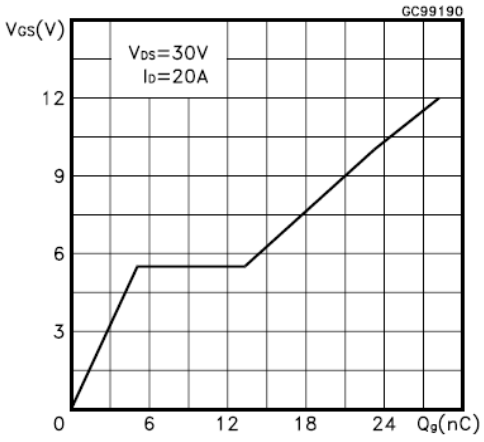

Figure 8. Capacitance variations

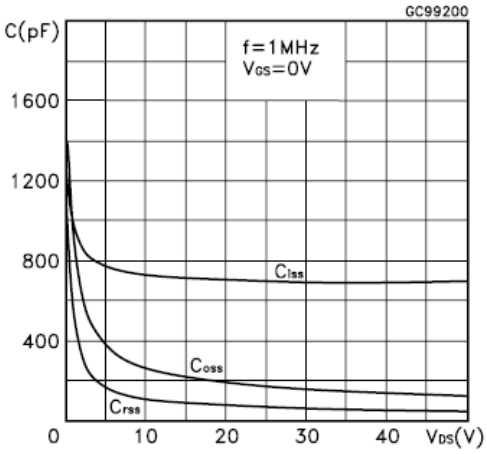

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Figure 9. Normalized gate threshold voltage vs. temperature

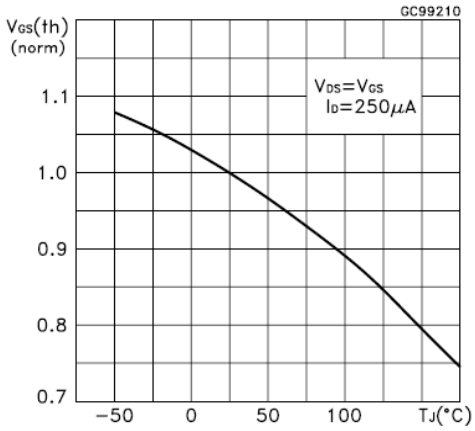

Figure 10. Normalized on resistance vs. temperature

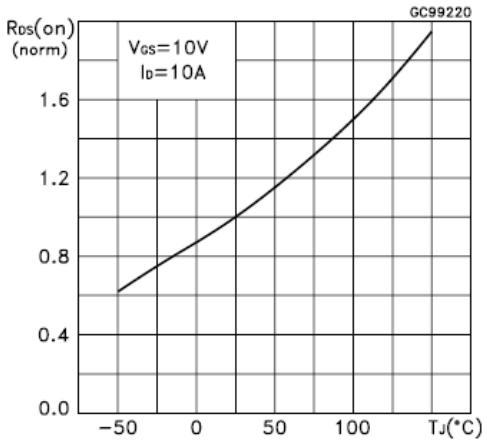

Figure 11. Source-drain diode forward characteristics

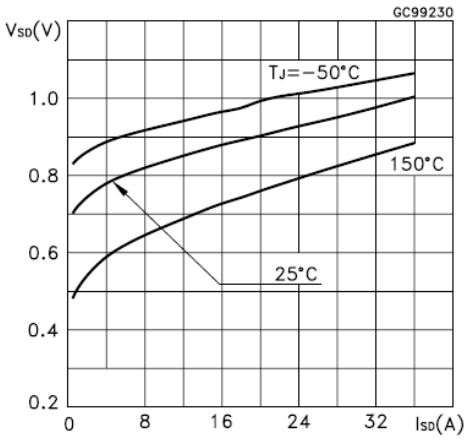

Figure 12 Normalized BVDSS vs. Temperature

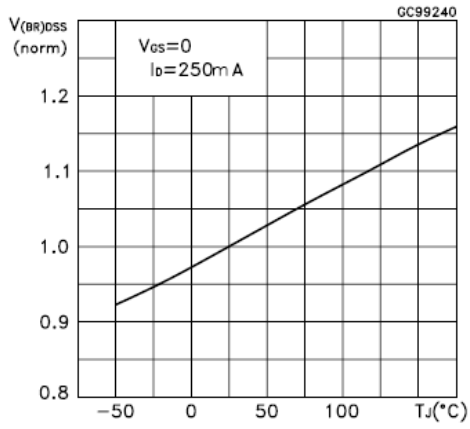

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Figure 13. Switching times test circuit for resistive load

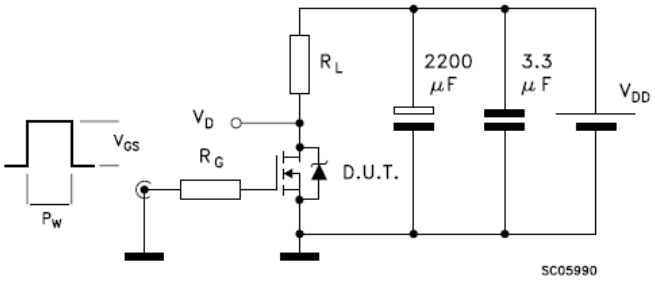


Figure 14. Gate charge test circuit

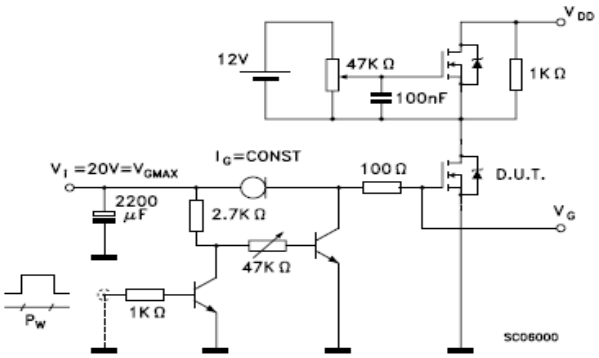


Figure 15. Test circuit for inductive load switching and diode recovery times

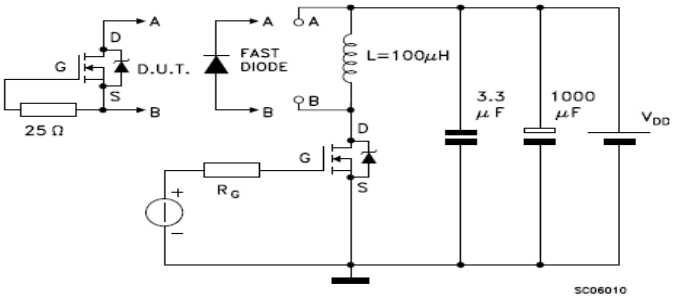


Figure 16. Unclamped Inductive load test circuit

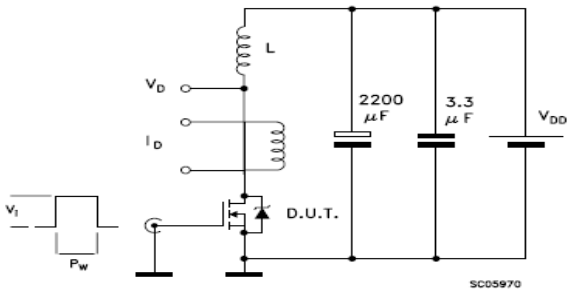


Figure 17. Unclamped inductive waveform

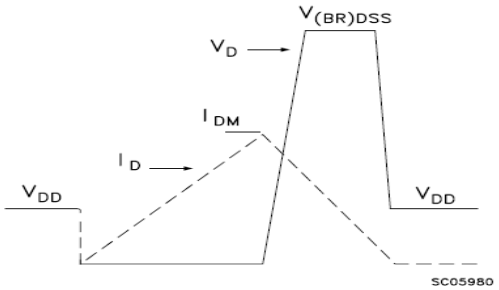
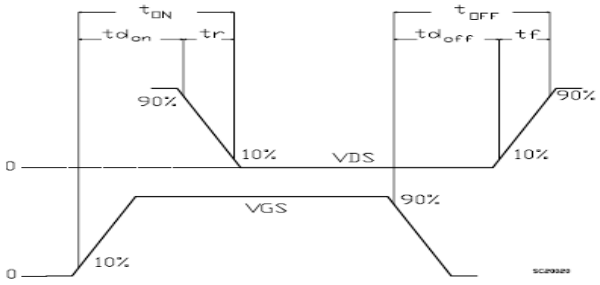
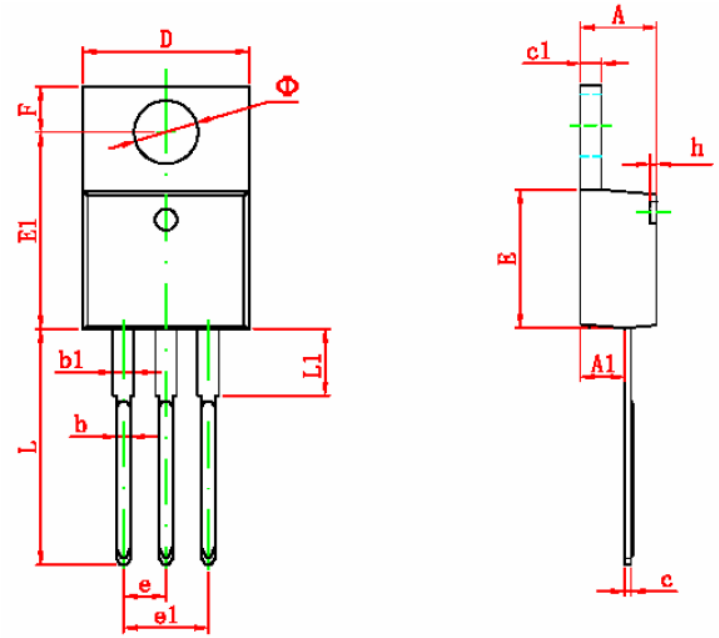


Figure 18. Switching time waveform



TO220-3L PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
ΦP	3.735	3.935	0.147	0.155

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