

Table 3: Absolute Maximum ratings

Symbol	Parameter	Value	Unit
V_{DS}	Drain-source Voltage ($V_{GS} = 0$)	30	V
V_{GS}	Gate- source Voltage	± 18	V
$I_{D(1)}$	Drain Current (continuous) at $T_C = 25^\circ\text{C}$	20	A
I_D	Drain Current (continuous) at $T_C = 100^\circ\text{C}$	12.6	A
$I_{DM(2)}$	Drain Current (pulsed)	80	A
P_{tot}	Total Dissipation at $T_C = 25^\circ\text{C}$	2.7	W

Table 4: Thermal Data

$R_{thj-amb}$ (3)	Thermal Resistance Junction-ambient Max	47	$^\circ\text{C/W}$
T_j	Maximum Operating Junction Temperature	-55 to 150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55 to 150	$^\circ\text{C}$

Table 5: Avalanche Characteristics

Symbol	Parameter	Max Value	Unit
I_{AV}	Not-Repetitive Avalanche Current (pulse width limited by T_j max)	12.5	A
E_{AS}	Single Pulse Avalanche Energy (starting $T_j = 25^\circ\text{C}$, $I_D = I_{AV}$, $V_{DD} = 24\text{V}$)	1.3	J

ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$ UNLESS OTHERWISE SPECIFIED)**Table 6: On /Off**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source Breakdown Voltage	$I_D = 1\text{mA}$, $V_{GS} = 0$	30			V
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0$)	$V_{DS} = 24\text{V}$			500	μA
I_{GSS}	Gate-body Leakage Current ($V_{DS} = 0$)	$V_{GS} = \pm 18\text{V}$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = 1\text{mA}$	1		2.5	V
$R_{DS(on)}$	Static Drain-source On Resistance	$V_{GS} = 10\text{V}$, $I_D = 10\text{A}$ $V_{GS} = 4.5\text{V}$, $I_D = 10\text{A}$		0.0032 0.004	0.004 0.0055	Ω Ω

Table 7: Dynamic

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
g_{fs} (4)	Forward Transconductance	$V_{DS} = 15\text{V}$, $I_D = 12\text{A}$		30		S
C_{iss} C_{oss} C_{rss}	Input Capacitance Output Capacitance Reverse Transfer Capacitance	$V_{DS} = 25\text{V}$, $f = 1\text{MHz}$, $V_{GS} = 0$		3950 720 70		pF pF pF

ELECTRICAL CHARACTERISTICS (CONTINUED)

Table 8: Switching On

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{d(on)}$ t_r	Turn-on Delay Time Rise Time	$V_{DD} = 15V$, $I_D = 10A$ $R_G = 4.7\Omega$, $V_{GS} = 4.5V$ (see Figure 15)		TBD TBD		ns ns
Q_g Q_{gs} Q_{gd}	Total Gate Charge Gate-Source Charge Gate-Drain Charge	$V_{DD}=15V$, $I_D=20A$ $V_{GS}= 4.5V$ (see Figure 17)		27.5 7.9 8.7	37	nC nC nC

Table 9: Switching Off

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{d(off)}$ t_f	Turn-off Delay Time Fall Time	$V_{DD} = 15V$, $I_D = 10A$ $R_G = 4.7\Omega$, $V_{GS} = 4.5V$ (see Figure 15)		TBD TBD		ns ns

Table 10: Source Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{SD} I_{SDM}	Source-drain Current Source-drain Current (pulsed)				20 80	A A
$V_{SD} (4)$	Forward On Voltage	$I_{SD} = 10A$, $V_{GS} = 0$			0.7	V
t_{rr} Q_{rr} I_{RRM}	Reverse Recovery Time Reverse Recovery Charge Reverse Recovery Current	$I_{SD} = 10A$, $di/dt = 100A/\mu s$ $V_{DD} = 25V$, $T_j = 150^\circ C$ (see Figure 16)		1.9	26 25	ns nC A

Notes:

1. This value is rated according to Rthj-pcb
2. Pulse width limited by safe operating area
3. When mounted on FR-4 board with 1 inch² pad, 2 oz of Cu and $t < 10sec$
4. Pulsed: pulse duration = 300 μs , duty cycle 1.5%

Figure 3: Safe Operating Area

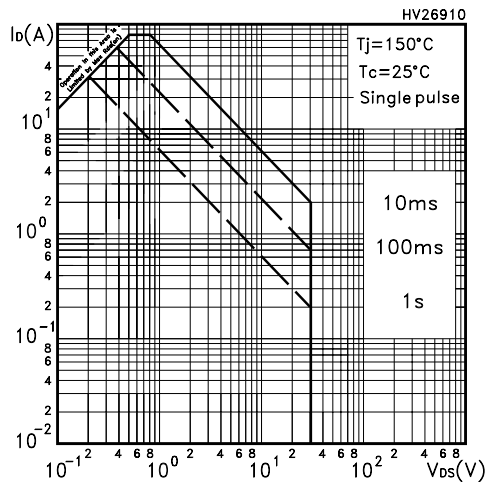


Figure 4: Output Characteristics

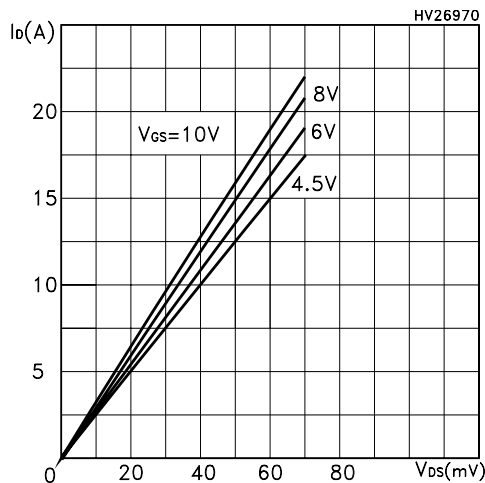


Figure 5: Transconductance

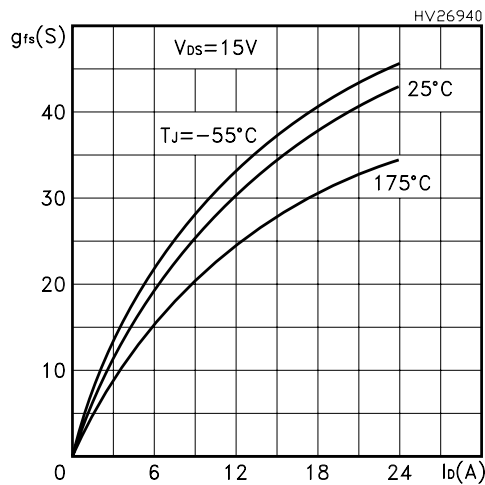


Figure 6: Thermal Impedance

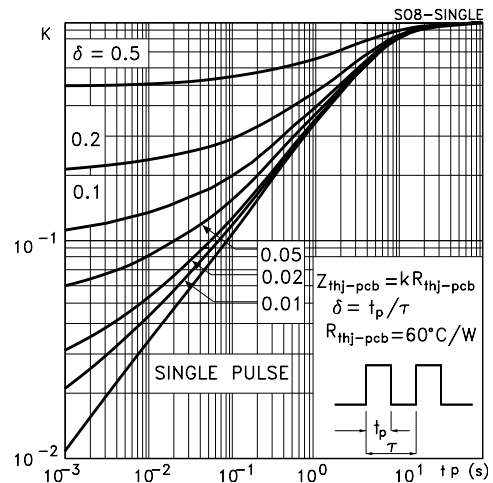


Figure 7: Transfer Characteristics

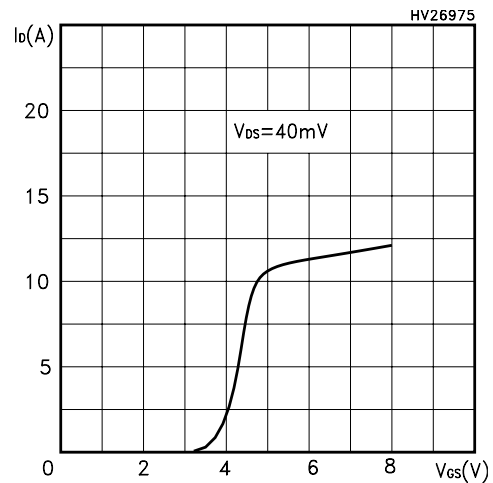


Figure 8: Static Drain-source On Resistance

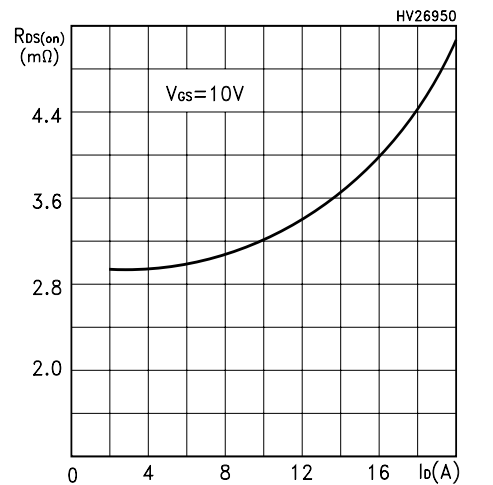


Figure 9: Gate Charge vs Gate-source Voltage

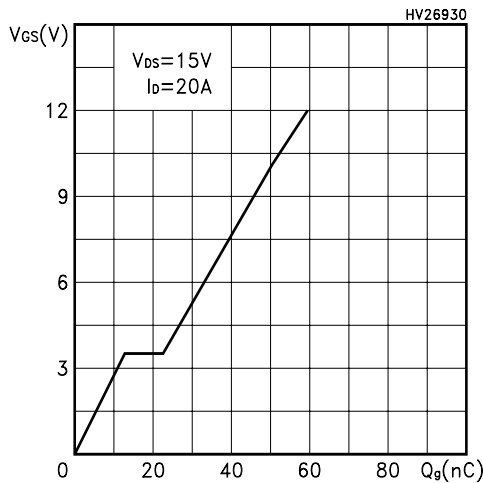


Figure 10: Normalized Gate Threshold Voltage vs Temperature

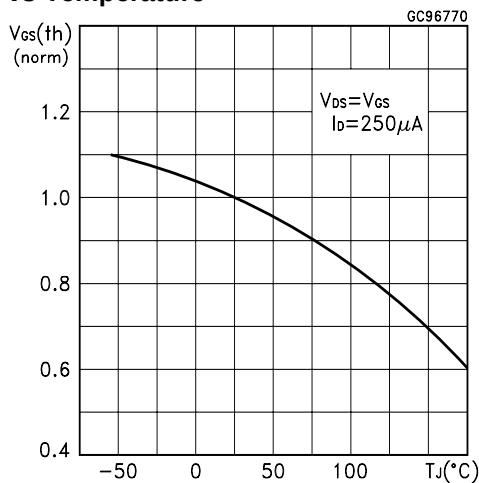


Figure 11: Normalized On Resistance vs Temperature

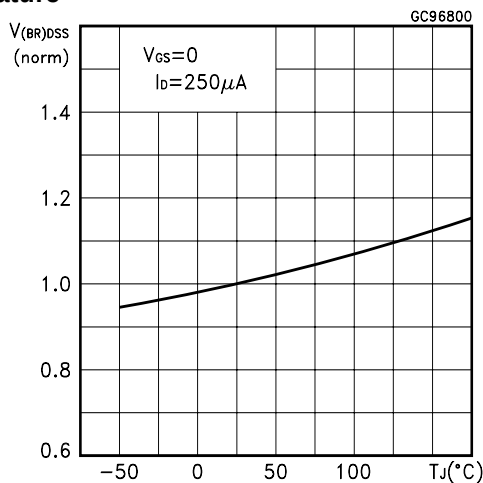


Figure 12: Capacitance Variations

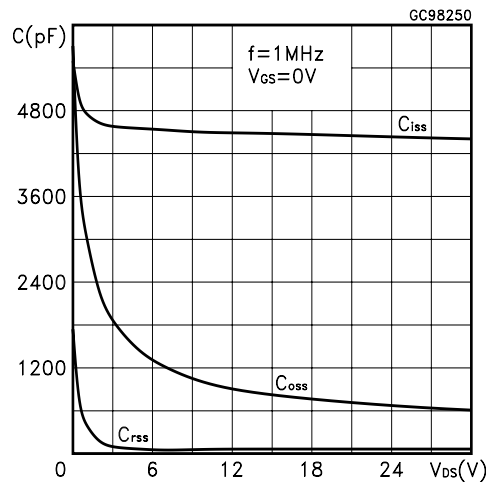


Figure 13: Normalized BVDSS vs Temperature

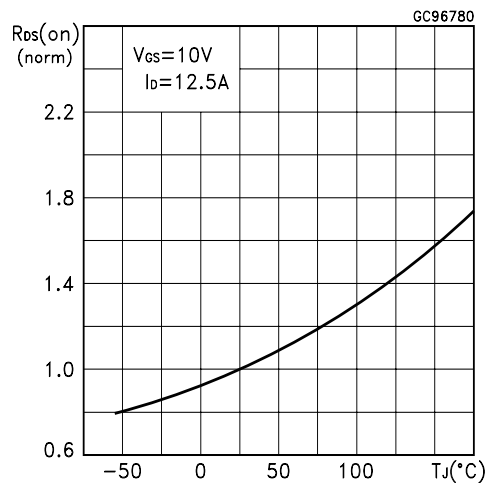


Figure 14: Source-Drain Diode Forward Characteristics

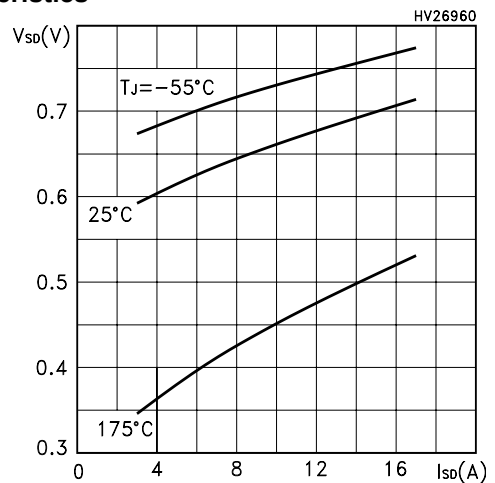


Figure 15: Switching Times Test Circuit For Resistive Load

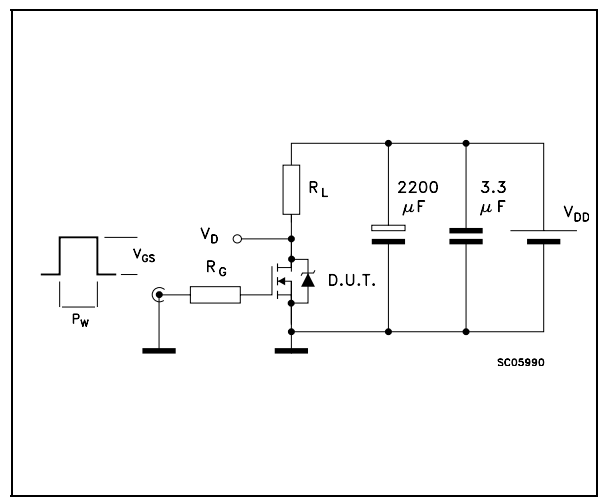


Figure 16: Test Circuit For Diode Recovery Times

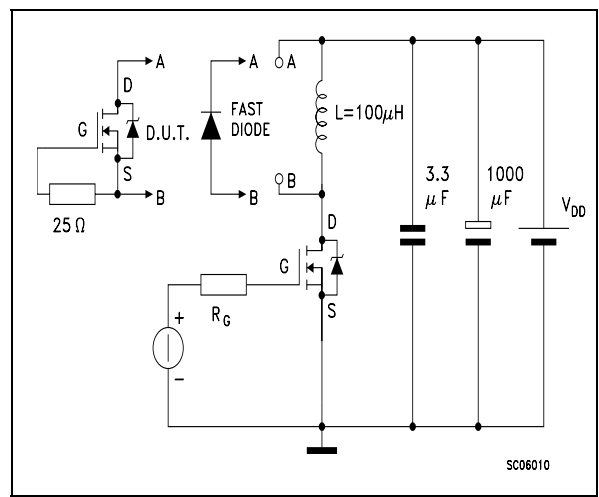
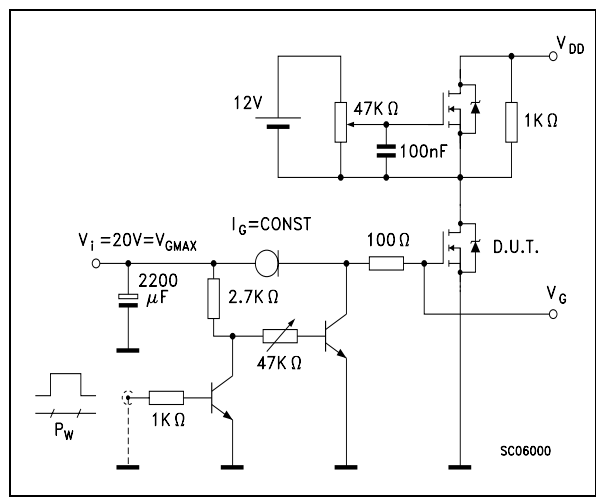


Figure 17: Gate Charge Test Circuit



SO-8 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			1.75			0.068
a1	0.1		0.25	0.003		0.009
a2			1.65			0.064
a3	0.65		0.85	0.025		0.033
b	0.35		0.48	0.013		0.018
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.019
c1	45 (typ.)					
D	4.8		5.0	0.188		0.196
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.14		0.157
L	0.4		1.27	0.015		0.050
M			0.6			0.023
S	8 (max.)					

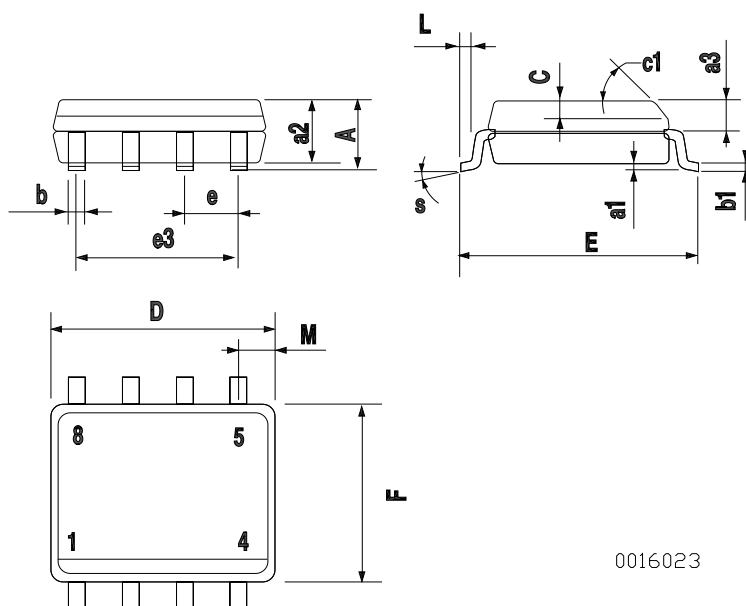


Table 11: Revision History

Date	Revision	Description of Changes
24-May-2005	1	First release
19-Dec-2005	2	Inserted curves

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