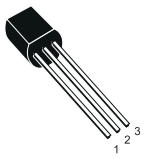
Wisdom Technologies Int'l

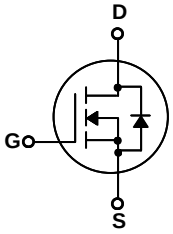
WFN1N60

600V N-Channel MOSFET

Features

- ☐ Low Intrinsic Capacitances
- ☐ Excellent Switching Characteristics
- ☐ Extended Safe Operating Area
- ☐ Unrivalled Gate Charge :Qg= 10nC (Typ.)
- ☐ BVDSS=600V,ID=1A
- ☐ $R_{DS(on)}$: 8 Ω (Max) @VG=10V
- ☐ 100% Avalanche Tested





TO-92

G-Gate,D-Drain,S-Sourse

Absolute Maximum Ratings *Tc=25℃ unless other wise noted*

Symbol	Parameter	WFN1N60	Units
V_{DSS}	Drain-Sourse Voltage	600	V
I_D	Drain Current -continuous (Tc=25℃)	1*	A
	-continuous (Tc=100℃)	0.63*	A
V_{GS}	Gate-Sourse Voltage	±30	V
E_{AS}	Single Plused Avanche Energy (Note1)	25	mJ
I_{AR}	Avalanche Current (Note2)	1	A
P_D	Power Dissipation (Tc=25℃)	23	W
T_J,T_{STG}	Operating and Storage Temperature Range	-55 ~ +150	℃
TL	Maximum lead temperature for soldering purpose,1/8" from case for 5 seconds	300	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max	Units
$R_{\theta JC}$ Thermal	Resistance,Junction to Case --			℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient --	40		℃/W

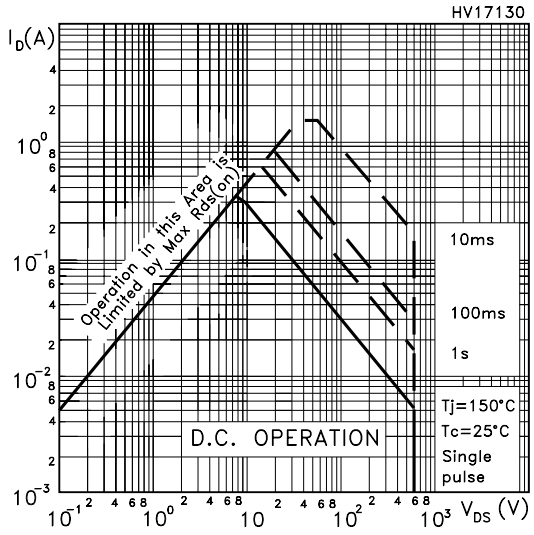
* Drain current limited by maximum junction temperature.

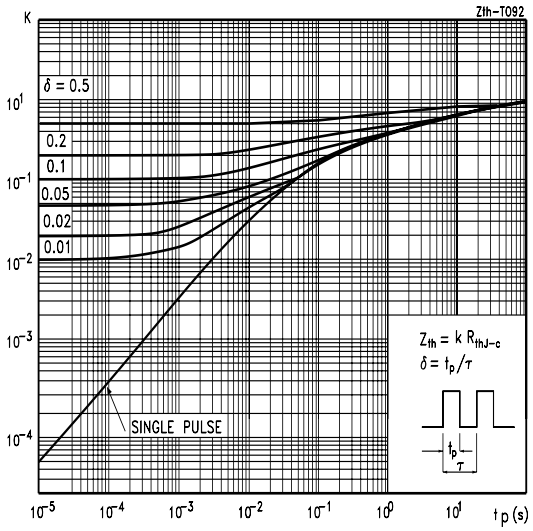
Electrical Characteristics Tc=25℃ unless other wise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourse Breakdown Voltage	ID=250μA，VGS=0	600	--	--	V
$\triangle BV_{DSS}/\triangle T_J$	Breakdown Voltage Temperature Conficient	I_D=250μA,Reference to 25℃	--	3	--	V/℃
IDSS	Zero Gate Voltage Drain Current	Vds=600V, Vgs=0V	--	--	1	μA
		Vds=480V, Tc=125℃			10	μA
IGSSF	Gate-body leakage Current, Forward	Vgs=+30V, Vds=0V	--	--	100	nA
IGSSR	Gate-body leakage Current, Reverse	Vgs=-30V, Vds=0V	--	--	-100	nA
On Characteristics						
$V_{GS(th)}$	Date Threshold Voltage	Id=250uA,Vds=Vgs	2	--	4	V
$R_{DS(on)}$	Static Drain-Sourse On-Resistance	Id=0.5A,Vgs=10V	--	--	8	Ω
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=25V，VGS=0，f=1.0MHz	--	156		pF
Coss	Output Capacitance		--	23.6		pF
Crss	Reverse Transfer Capacitance		--	3.8		pF
Switching Characteristics						
Td(on)	Turn-On Delay Time	VDD=300V，ID=1A RG=25Ω (Note 3,4)	--	6.5	--	nS
Tr	Rise Time		--	5	--	nS
Td(off)	Turn-Off Delay Time		--	19	--	nS
Tf	Turn-Off Fall Time		--	25	--	nS
Qg	Total Gate Charge	VDS=480,VGS=10V，ID=1A (Note 3,4)	--	7	10	nC
Qgs	Gate-Sourse Charge		--	1.1	--	nC
Qgd	Gate-Drain Charge			3.4	--	nC
Drain-Sourse Diode Characteristics and Maximum Ratings						
I_S	Maximun Continuous Drain-Sourse Diode Forward Current		--	--	1	A
I_{SM}	Maximun Plused Drain-Sourse DiodeForwad Current		--	--	4	A
V_{SD}	Drain-Sourse Diode Forward Voltage	Id=1A	--	--	1.5	V
trr	Reverse Recovery Time	I_S=1A,V_{GS} =0V di_F/dt=100A/μs (Note3)	--	229	--	nS
Qrr	Reverse Recovery Charge		--	337	--	μC

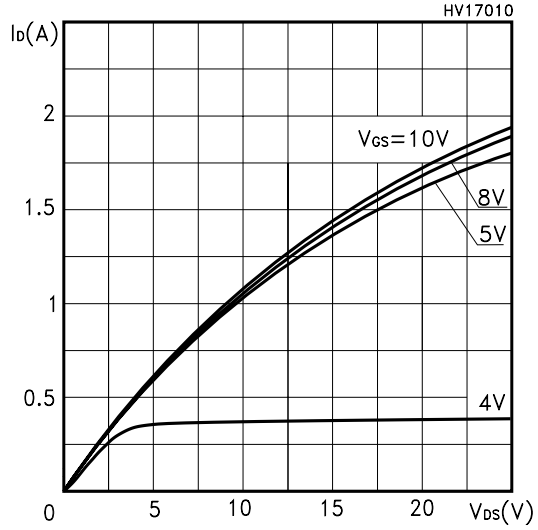
*Notes
1, L=55mH, IAS=1.0A, VDD=50V, RG=25Ω, Starting TJ =25°C
2, Repetitive Rating : Pulse width limited by maximum junction temperature
3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
4, Essentially Independent of Operating Temperature

Typical Characteristics

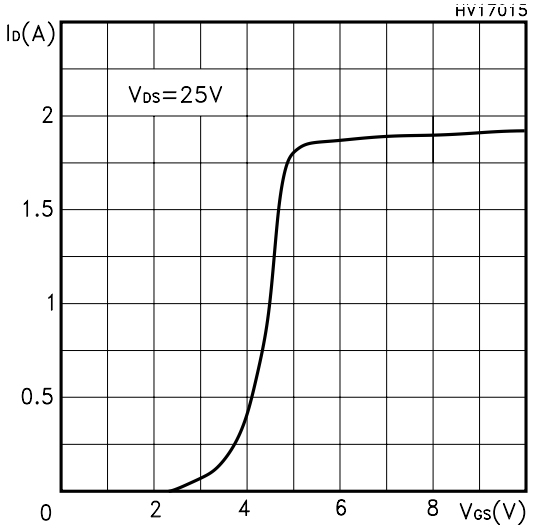




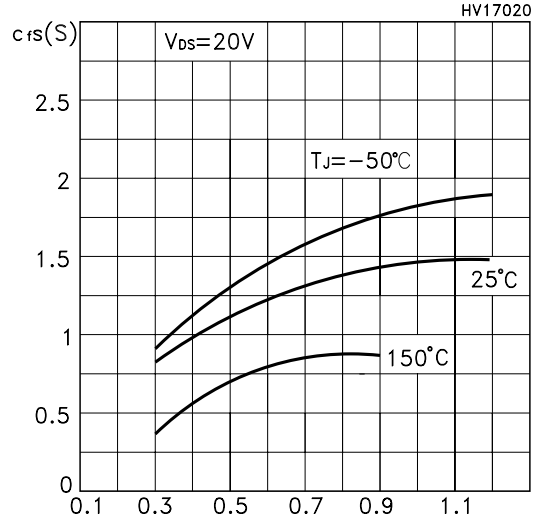
Output Characteristics



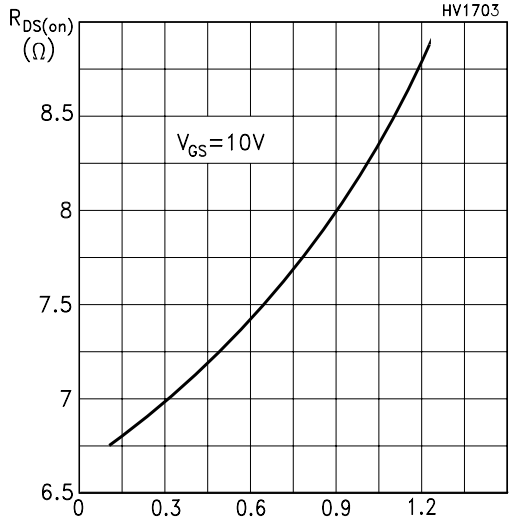
Transfer Characteristics



Transconductance

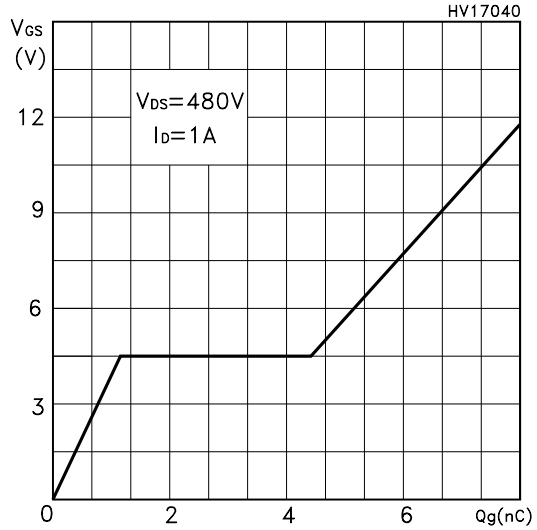


Static Drain-source On Resistance

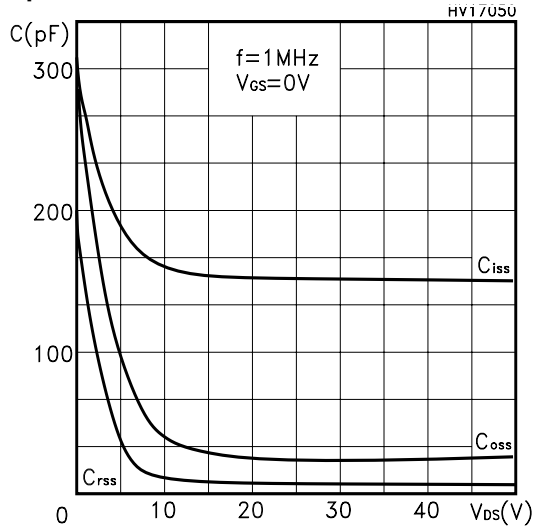


Typical Characteristics (Continued)

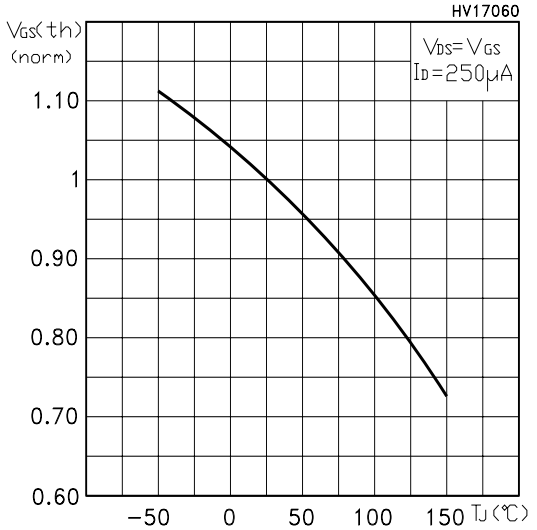
Gate Charge vs Gate-source Voltage



Capacitance Variations



Normalized Gate Threshold Voltage vs Temp.



Normalized On Resistance vs Temperature

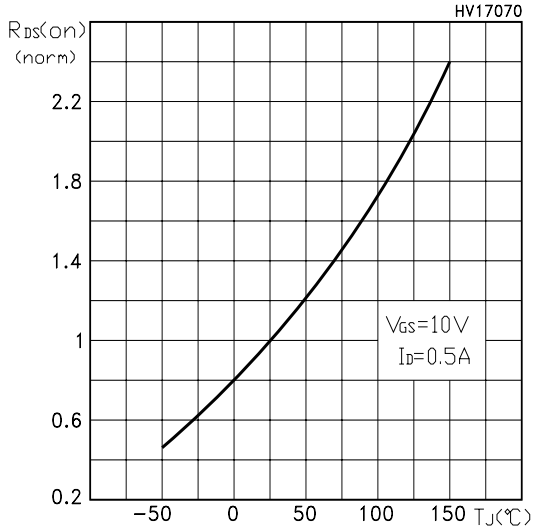


Fig. 1: Unclamped Inductive Load Test Circuit

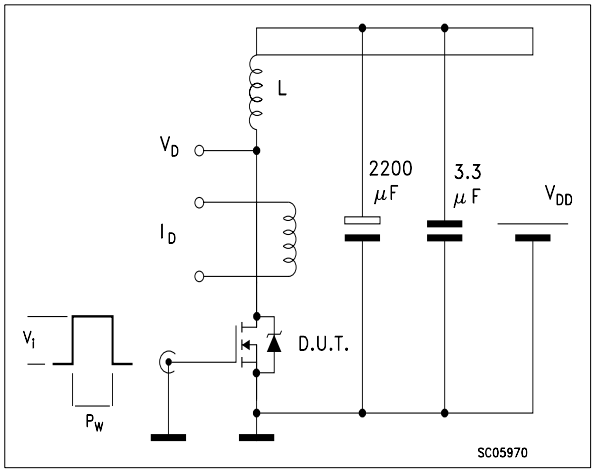


Fig. 2: Unclamped Inductive Waveform

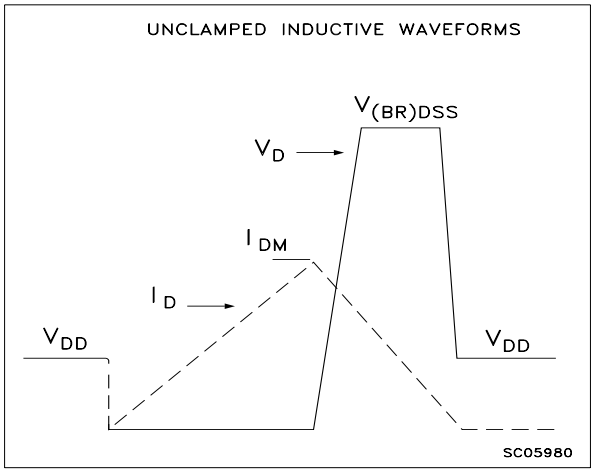


Fig. 3: Switching Times Test Circuit For Resistive Load

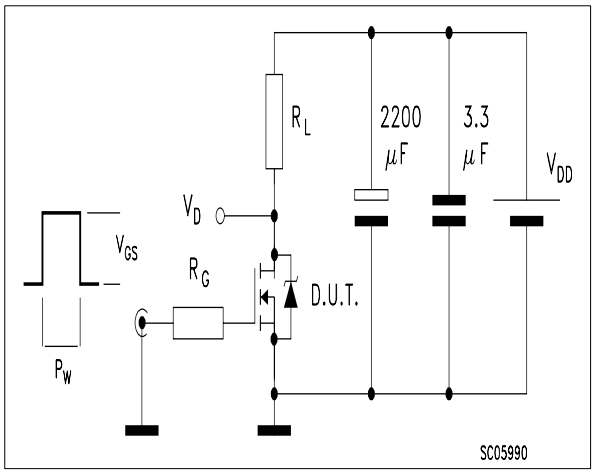


Fig. 4: Gate Charge test Circuit

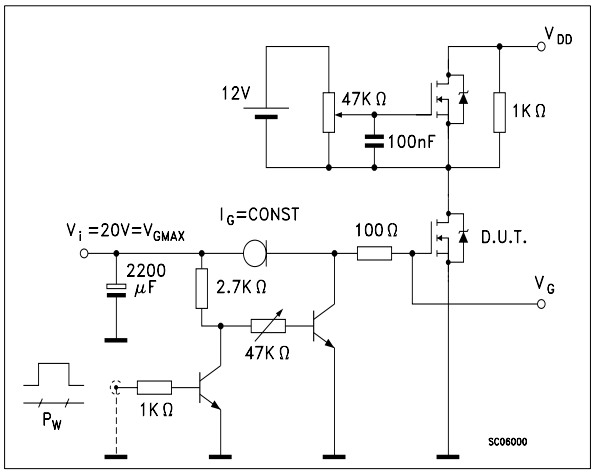


Fig. 5: Test Circuit For Inductive Load Switching And Diode Recovery Times