Shantou Huashan Electronic Devices Co.,Ltd.

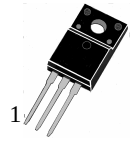
N-Channel MOSFET

HFF630

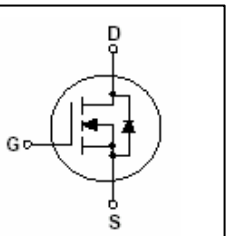
APPLICATIONSL

High Voltage High-Speed Switching.

TO-220F



1—G
2—D
3—S



ABSOLUTE MAXIMUM RATINGS (T_a=25℃)

T_{stg}——Storage Temperature·····-55~150℃

T_j——Operating Junction Temperature ·····150℃

P_D—— Allowable Power Dissipation (T_c=25℃) ·····38W

V_{DSS}—— Drain-Source Voltage ····· 200V

V_{DGR}—— Drain-Gate Voltage (R_{GS}=1MΩ) ·····500V

V_{GSS}—— Gate-Source Voltage ·····±30V

I_D—— *Drain Current (T_c=25℃)·····9.0A

* Drain current limited by maximumjunction temperature

ELECTRICAL CHARACTERISTICS (T_a=25℃)

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	200			V	I_D=250μA ,V_{GS}=0V
I_{DSS}	Zero Gate Voltage Drain Current			10	μA	V_{DS} =200V， V_{GS}=0
I_{GSS}	Gate –Source Leakage Current			±100	nA	V_{GS}=±30V , V_{DS} =0V
$V_{GS(th)}$	Gate Threshold Voltage	2.0		4.0	V	V_{DS} = V_{GS} , I_D =250μA
$R_{DS(on)}$	Static Drain-Source On-Resistance		0.34	0.4	?	V_{GS}=10V, I_D =4.5A
gfs	Forward Transconductance		7.05		S	V_{DS} = 40V , I_D =4.5A *
Ciss	Input Capacitance		550	720	pF	V_{DS} =25V, V_{GS}=0,f=1MHz
Coss	Output Capacitance		85	110	pF	
Crss	Reverse Transfer Capacitance		22	29	pF	
$t_{d(on)}$	Turn - On Delay Time		11	30	nS	V_{DD} =100V, I_D =9A R_G= 25 Ω *
tr	Rise Time		70	150	nS	
$t_{d(off)}$	Turn - Off Delay Time		60	130	nS	
t_f	Fall Time		65	140	nS	
Qg	Total Gate Charge		22	29	nC	V_{DS} =0.8V_{DSS} V_{GS}=10V I_D=9.0A *
Qgs	Gate–Source Charge		3.6		nC	
Qgd	Gate–Drain Charge		10.2		nC	
Is	Continuous Source Current			9.0	A	
V_{SD}	Diode Forward Voltage			1.5	V	I_S =9.0A , V_{GS}=0
Rth(j-c)	Thermal Resistance, Junction-to-Case			3.33	℃/W	

*Pulse Test：Pulse Width≤300μs， Duty Cycle≤2%

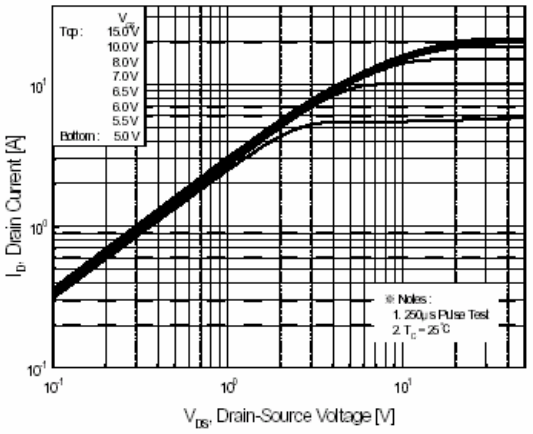


Figure 1. On-Region Characteristics

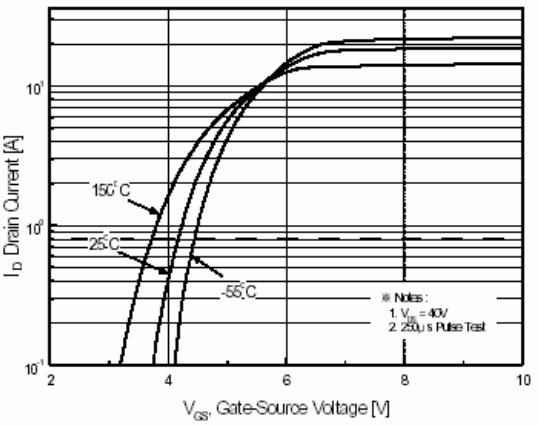


Figure 2. Transfer Characteristics

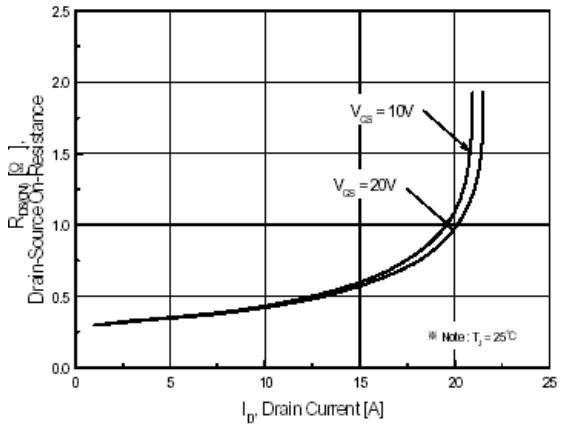


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

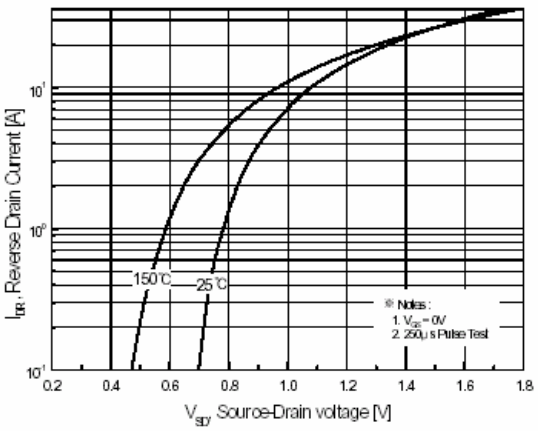


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

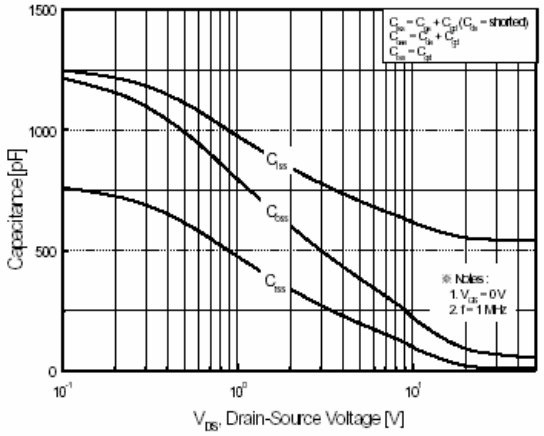


Figure 5. Capacitance Characteristics

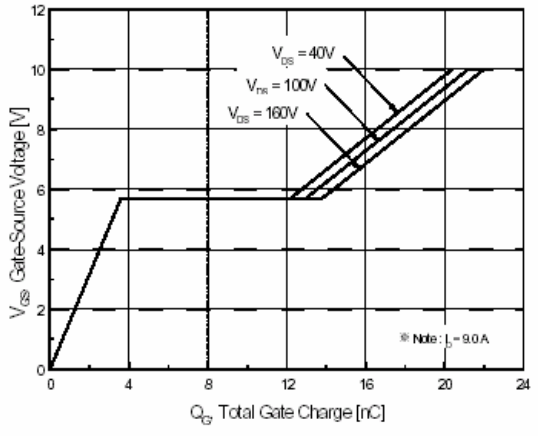


Figure 6. Gate Charge Characteristics

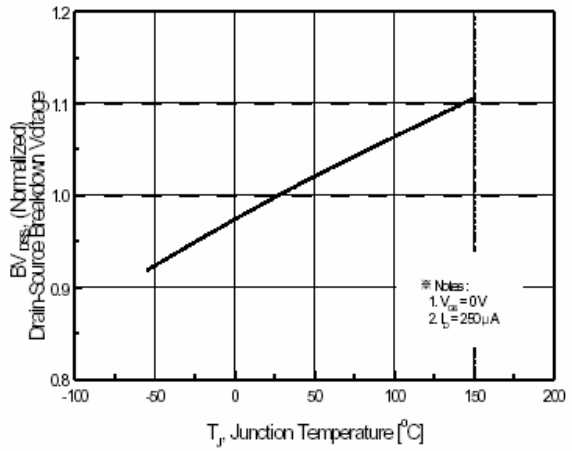


Figure 7. Breakdown Voltage Variation vs Temperature

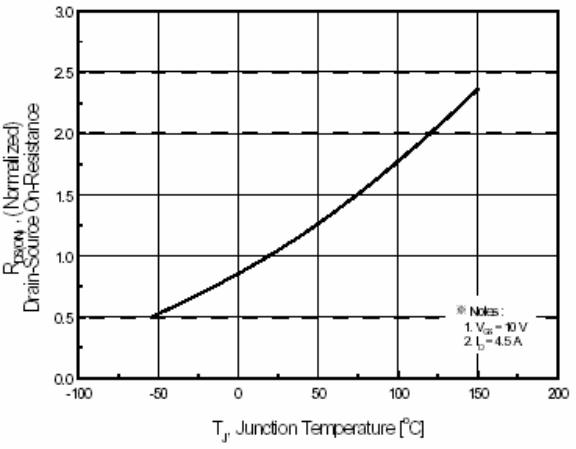


Figure 8. On-Resistance Variation vs Temperature

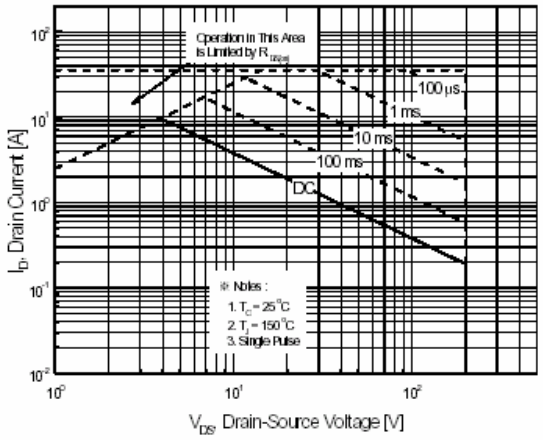


Figure 9 Maximum Safe Operating Area

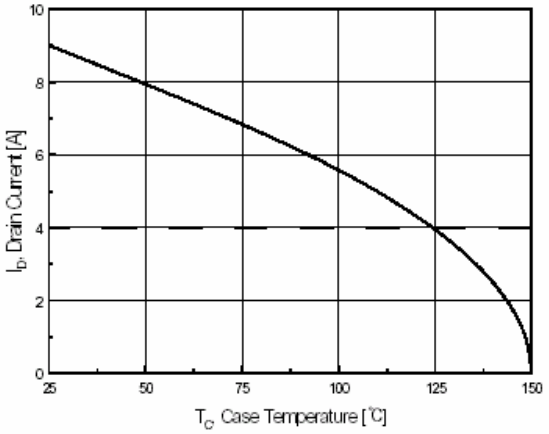


Figure 10. Maximum Drain Current vs Case Temperature

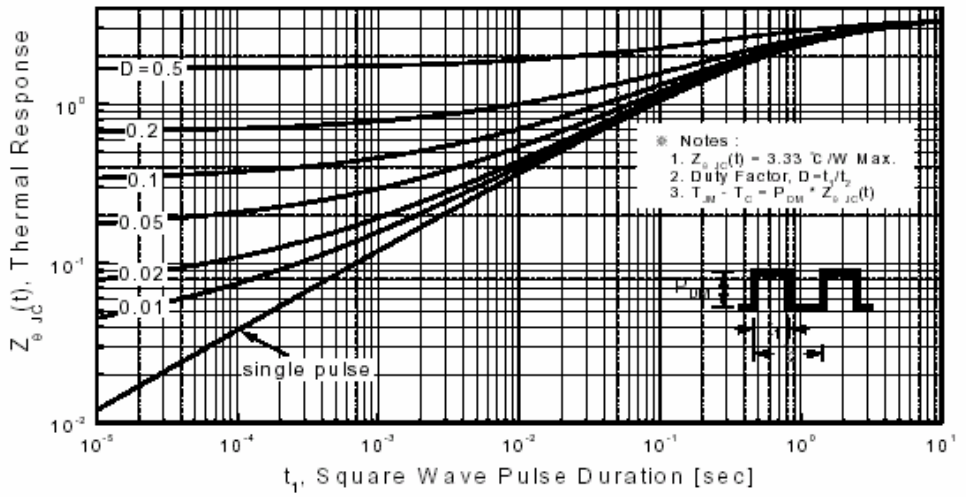


Figure 11 Transient Thermal Response Curve

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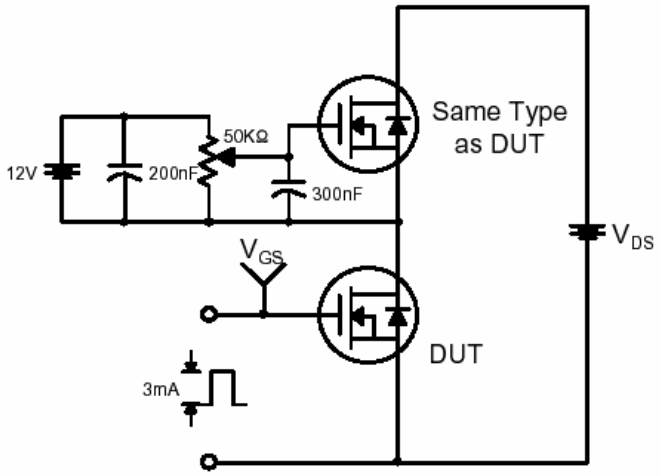
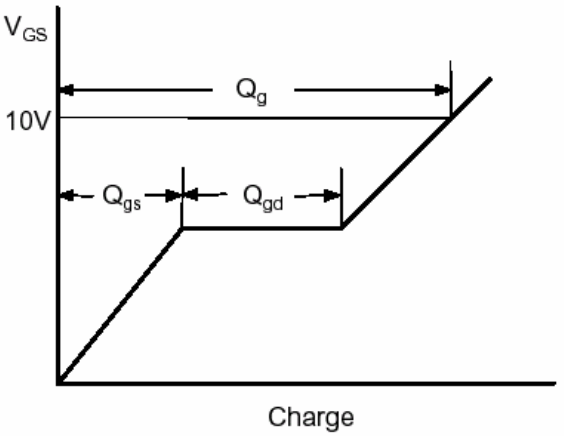
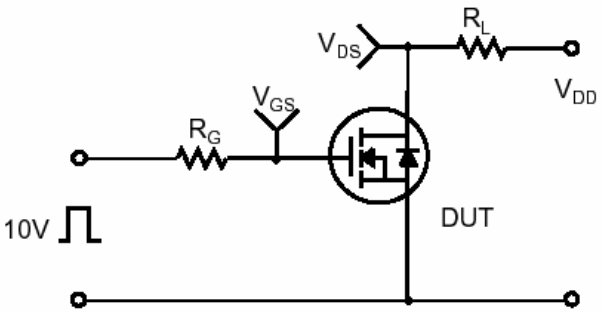
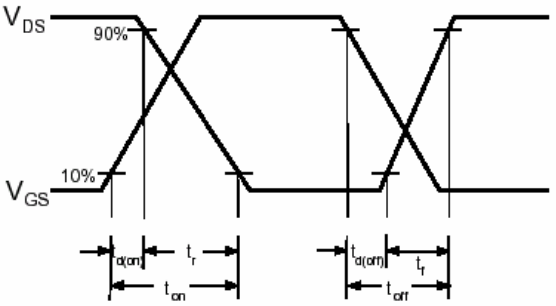
Gate Charge Test Circuit & Waveform



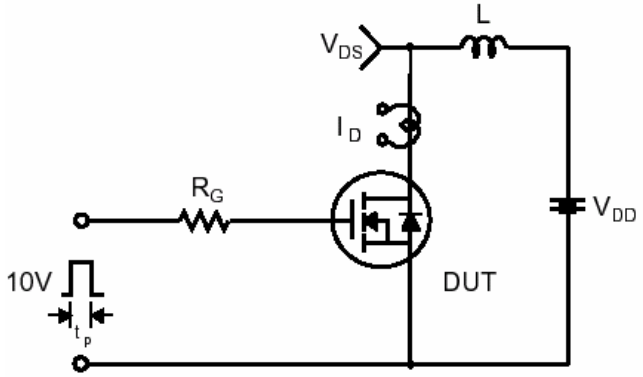


Resistive Switching Test Circuit & Waveforms

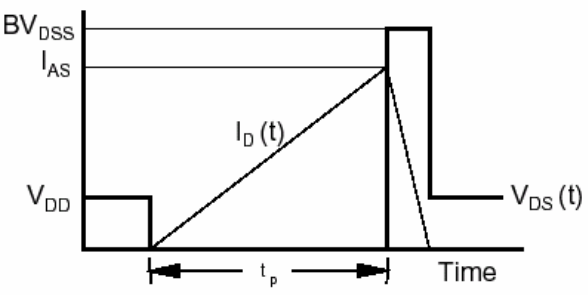




Unclamped Inductive Switching Test Circuit & Waveforms



$$E_{AS} = \frac{1}{2} L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$



Peak Diode Recovery dv/dt Test Circuit & Waveforms