

**HFF630****APPLICATIONS**

High Voltage High-Speed Switching.

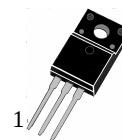
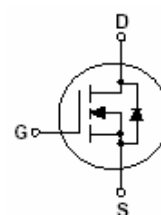
ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

T_{stg}	Storage Temperature.....	-55~150
T_j	Operating Junction Temperature	150
P_D	Allowable Power Dissipation ($T_c=25^\circ\text{C}$)	38W
V_{DSS}	Drain-Source Voltage	200V
V_{DGR}	Drain-Gate Voltage ($R_{\text{GS}}=1\text{M}\Omega$)	500V
V_{GSS}	Gate-Source Voltage	$\pm 30\text{V}$
I_D	*Drain Current($T_c=25^\circ\text{C}$).....	9.0A

* Drain current limited by maximum junction temperature

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

TO-220F

1—G
2—D
3—S

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	200			V	$I_D=250\mu\text{A}$, $V_{\text{GS}}=0\text{V}$
I_{DSS}	Zero Gate Voltage Drain Current			10	μA	$V_{\text{DS}}=200\text{V}$, $V_{\text{GS}}=0$
I_{GSS}	Gate-Source Leakage Current			± 100	nA	$V_{\text{GS}}=\pm 30\text{V}$, $V_{\text{DS}}=0\text{V}$
$V_{\text{GS(th)}}$	Gate Threshold Voltage	2.0		4.0	V	$V_{\text{DS}}=V_{\text{GS}}$, $I_D=250\mu\text{A}$
$R_{\text{DS(on)}}$	Static Drain-Source On-Resistance		0.34	0.4	Ω	$V_{\text{GS}}=10\text{V}$, $I_D=4.5\text{A}$
g_{fs}	Forward Transconductance		7.05		S	$V_{\text{DS}}=40\text{V}$, $I_D=4.5\text{A}^*$
C_{iss}	Input Capacitance		550	720	pF	$V_{\text{DS}}=25\text{V}$, $V_{\text{GS}}=0$, $f=1\text{MHz}$
C_{oss}	Output Capacitance		85	110	pF	
C_{rss}	Reverse Transfer Capacitance		22	29	pF	
$t_{\text{d(on)}}$	Turn - On Delay Time		11	30	nS	$V_{\text{DD}}=100\text{V}$, $I_D=9\text{A}$ $R_G=25\Omega^*$
t_r	Rise Time		70	150	nS	
$t_{\text{d(off)}}$	Turn - Off Delay Time		60	130	nS	
t_f	Fall Time		65	140	nS	$V_{\text{DS}}=0.8V_{\text{DSS}}$ $V_{\text{GS}}=10\text{V}$ $I_D=9.0\text{A}^*$
Q_g	Total Gate Charge		22	29	nC	
Q_{gs}	Gate-Source Charge		3.6		nC	
Q_{gd}	Gate-Drain Charge		10.2		nC	
I_s	Continuous Source Current			9.0	A	
V_{SD}	Diode Forward Voltage			1.5	V	$I_s=9.0\text{A}$, $V_{\text{GS}}=0$
$R_{\text{th(j-c)}}$	Thermal Resistance , Junction-to-Case			3.33	/W	

*Pulse Test : Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

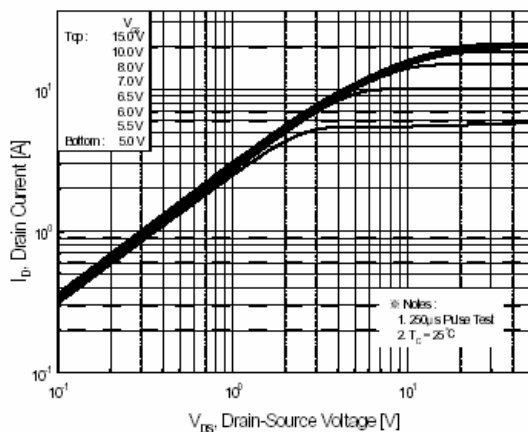


Figure 1. On-Region Characteristics

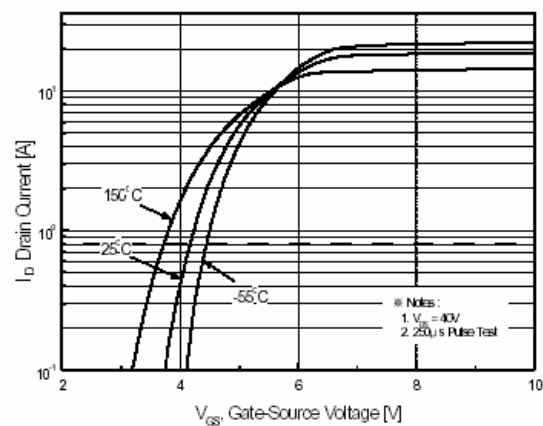


Figure 2. Transfer Characteristics

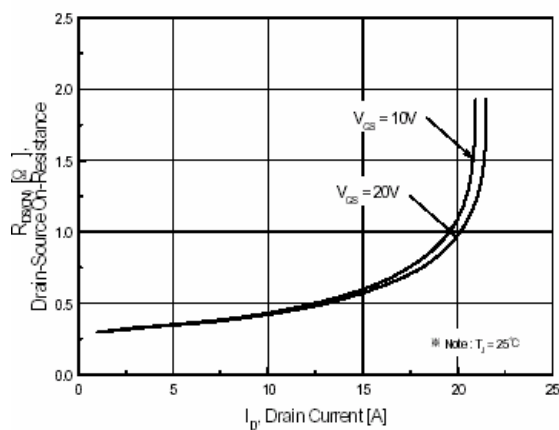


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

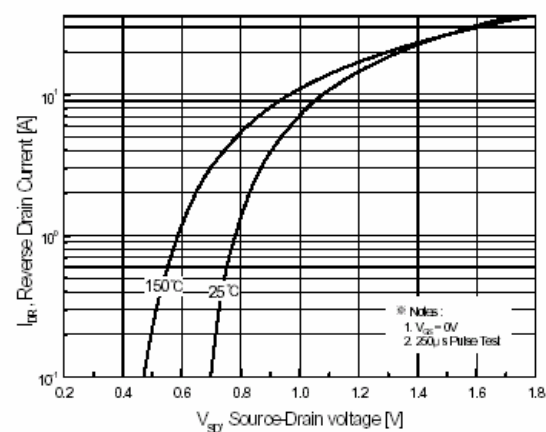


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

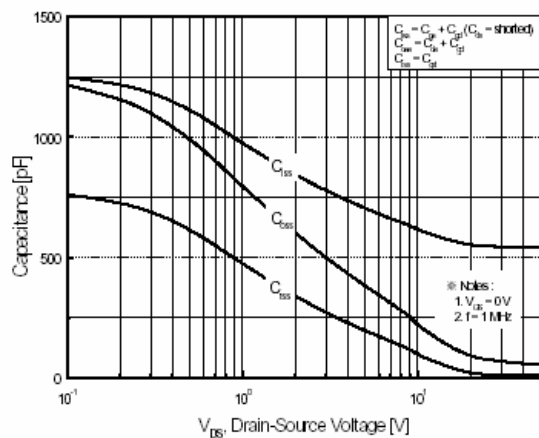


Figure 5. Capacitance Characteristics

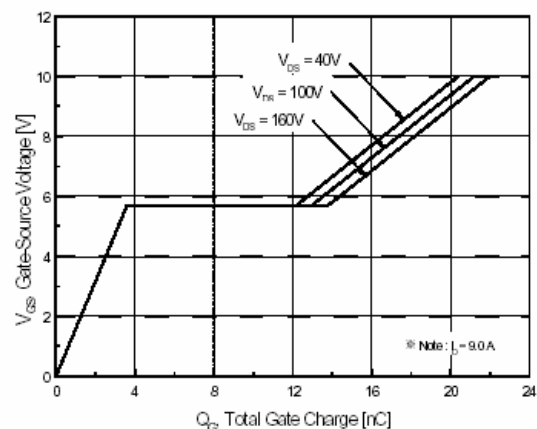


Figure 6. Gate Charge Characteristics

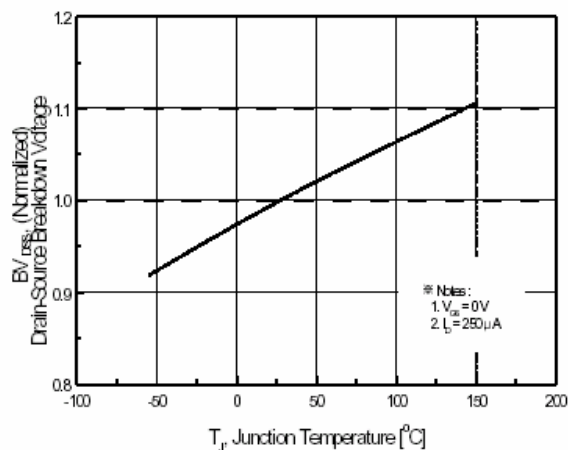


Figure 7. Breakdown Voltage Variation vs Temperature

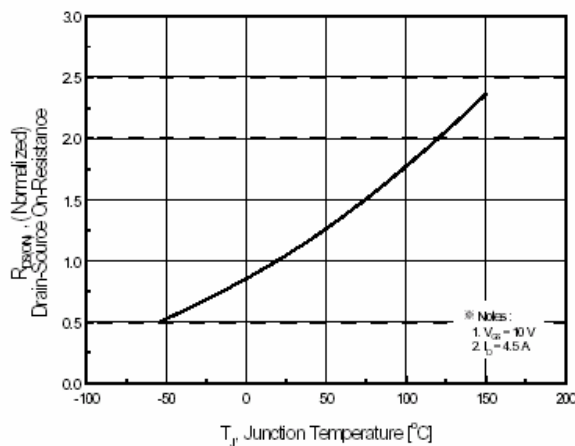


Figure 8. On-Resistance Variation vs Temperature

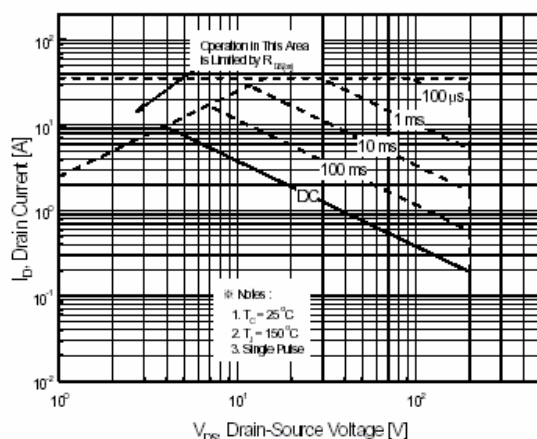


Figure 9 Maximum Safe Operating Area

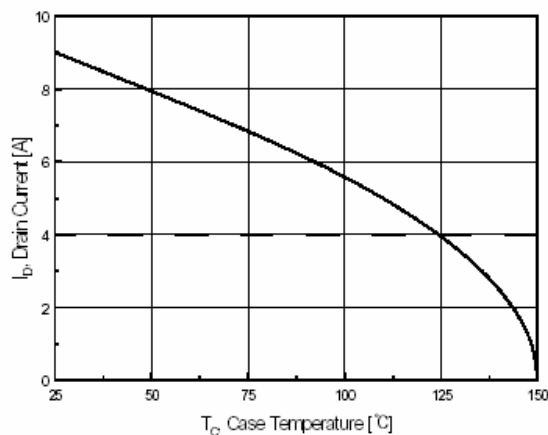


Figure 10. Maximum Drain Current vs Case Temperature

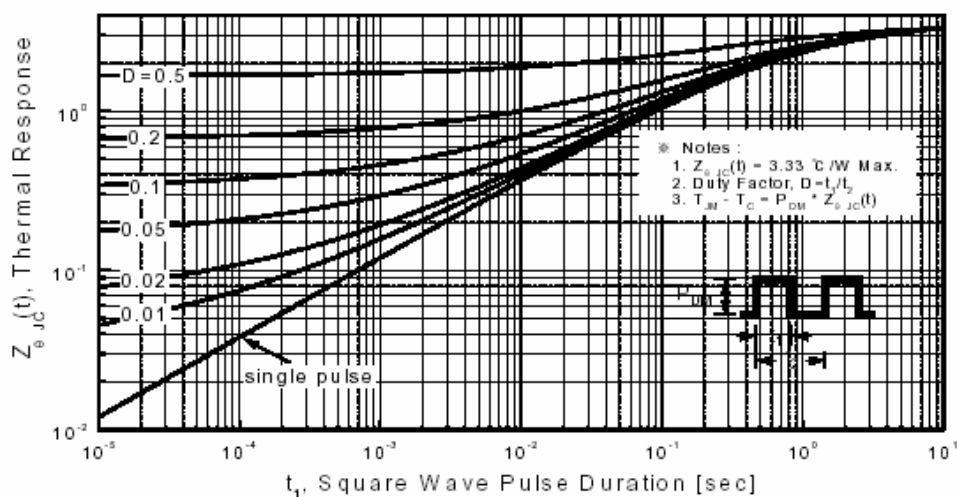


Figure 11 Transient Thermal Response Curve

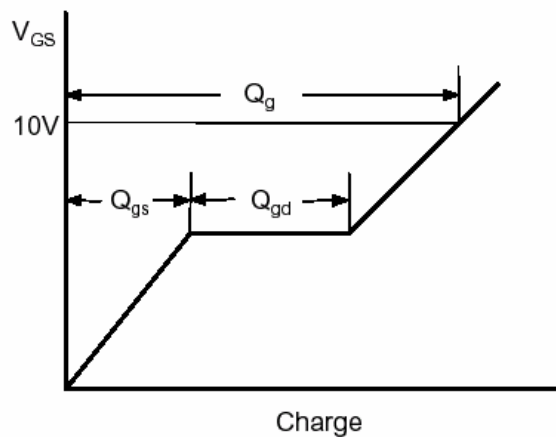
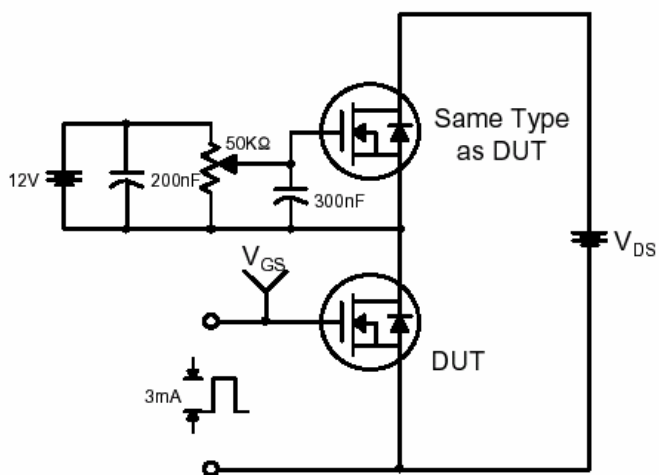


Shantou Huashan Electronic Devices Co., Ltd.

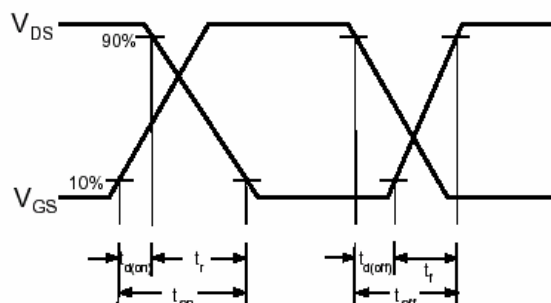
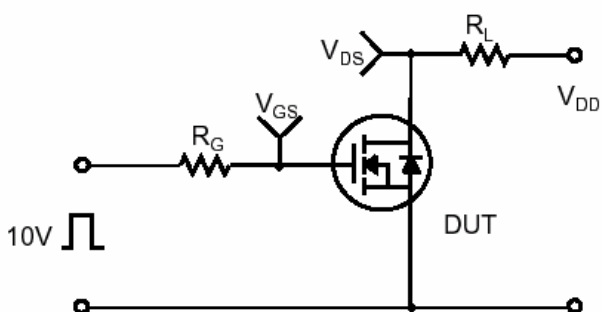
N-Channel MOSFET

HFF630

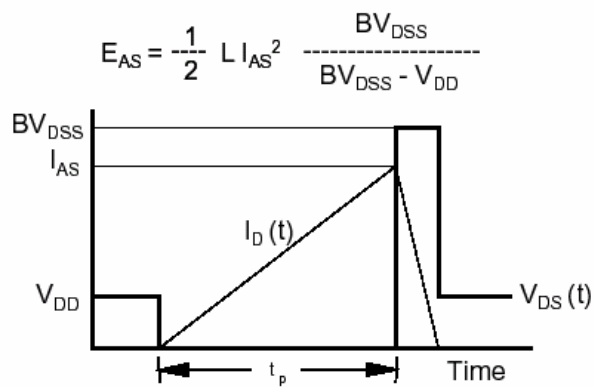
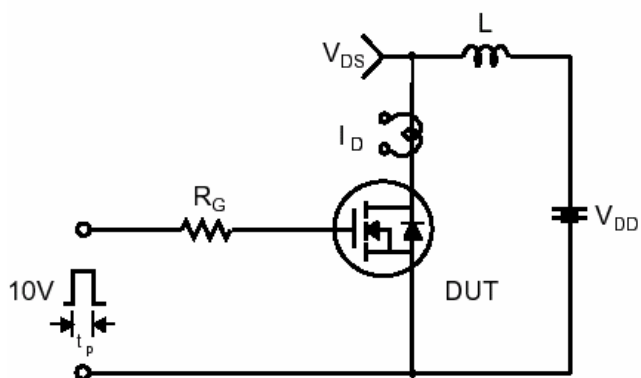
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms





Peak Diode Recovery dv/dt Test Circuit & Waveforms

