



# HFF630

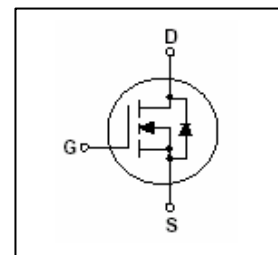
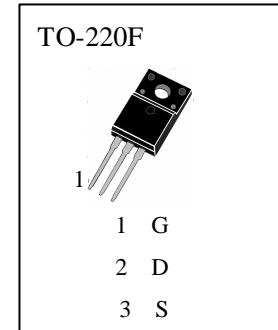
## APPLICATIONS

High Voltage High-Speed Switching.

## 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 ( $R_{GS}=1M$ ) .....	500V
$V_{GSS}$	Gate-Source Voltage .....	$\pm 30V$
$I_D$	*Drain Current( $T_c=25$ ).....	9.0A

\* Drain current limited by maximum junction temperature



## ELECTRICAL CHARACTERISTICS ( $T_a=25$ )

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

\*Pulse Test : Pulse Width 300  $\mu s$  , Duty Cycle 2%

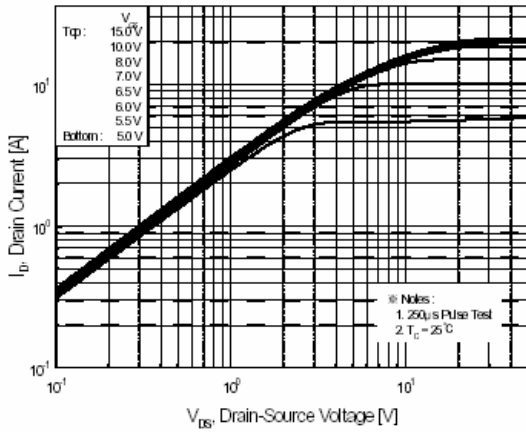


Figure 1. On-Region Characteristics

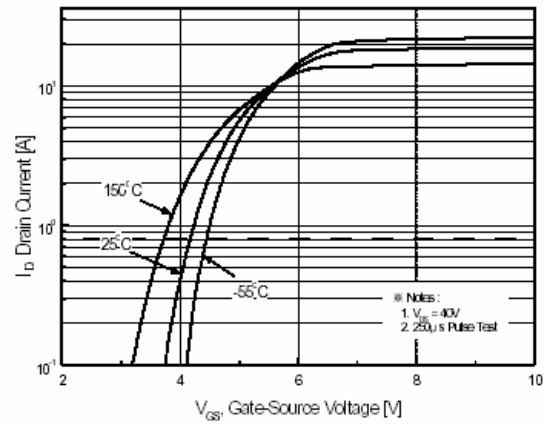


Figure 2. Transfer Characteristics

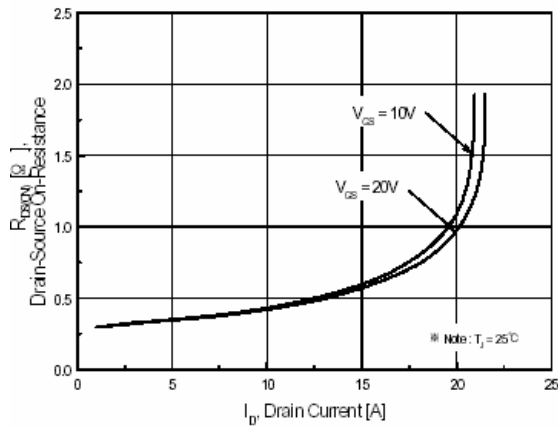


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

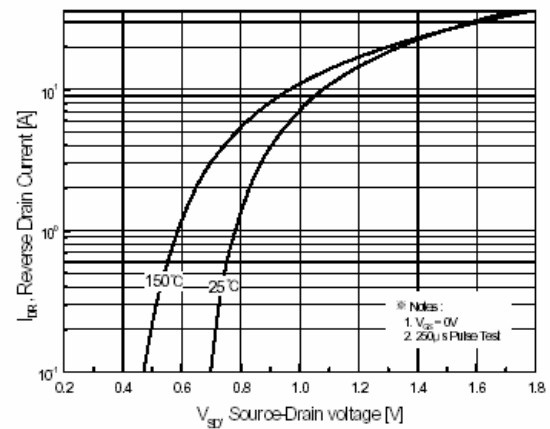


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

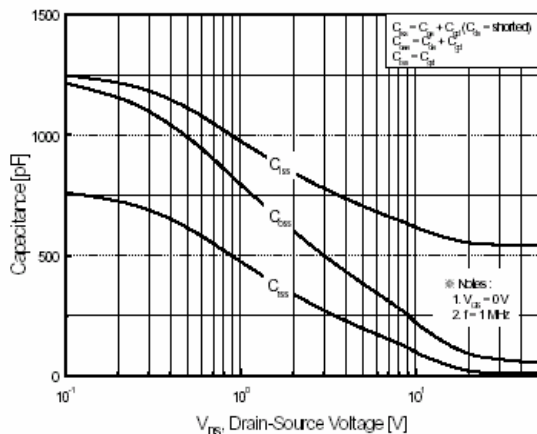


Figure 5. Capacitance Characteristics

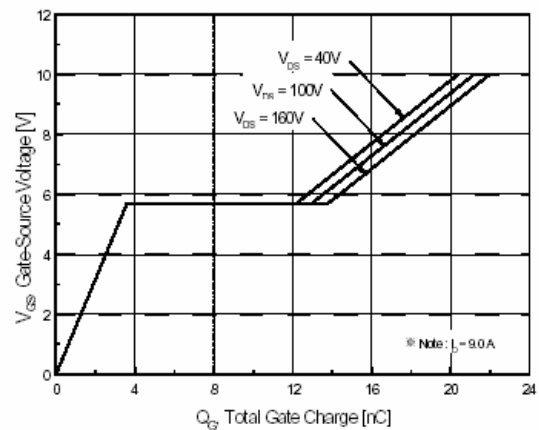


Figure 6. Gate Charge Characteristics

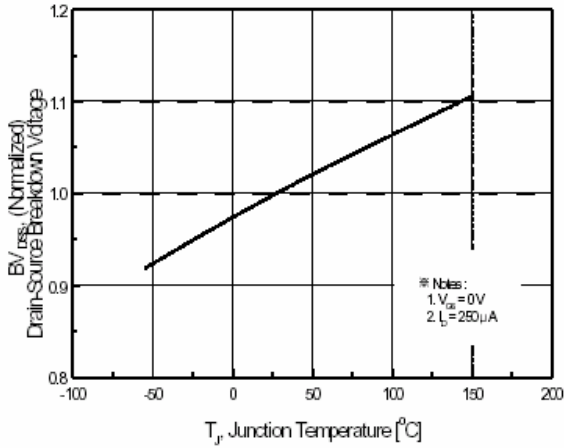


Figure 7. Breakdown Voltage Variation vs Temperature

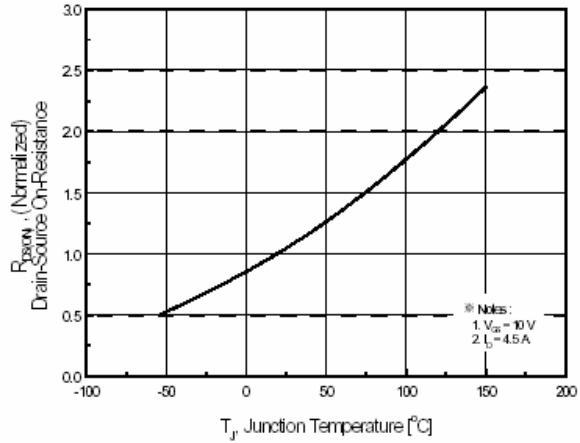


Figure 8. On-Resistance Variation vs Temperature

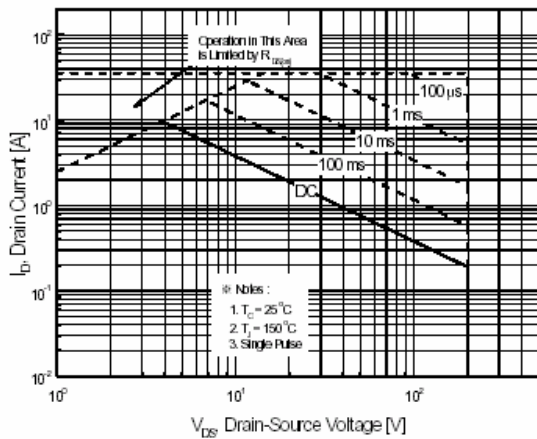


Figure 9 Maximum Safe Operating Area

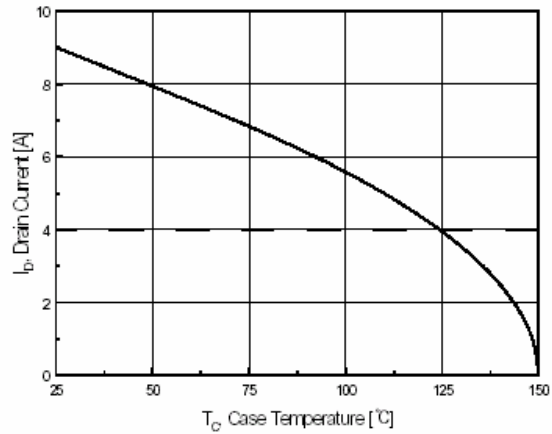


Figure 10. Maximum Drain Current vs Case Temperature

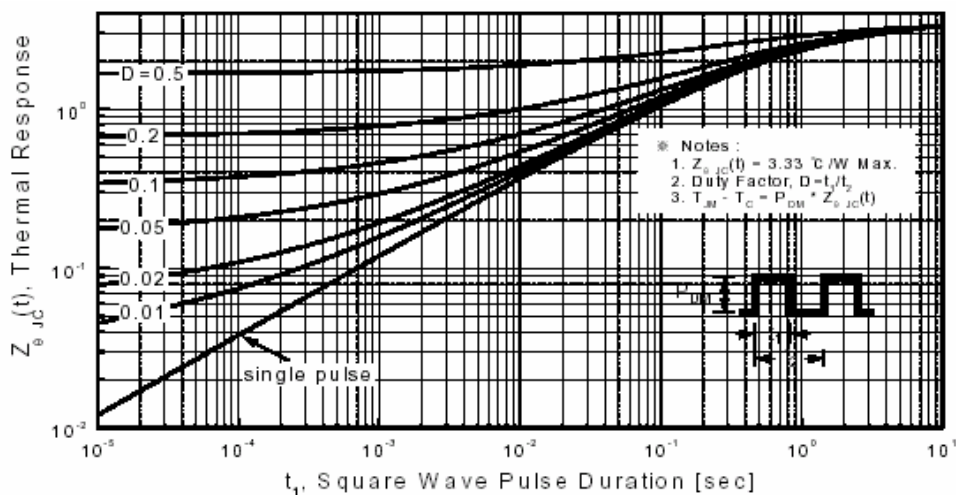
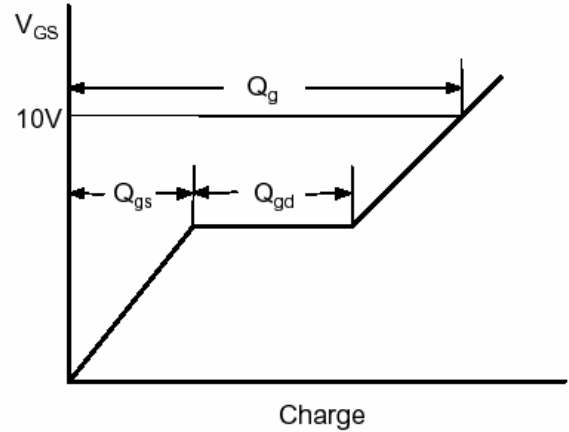
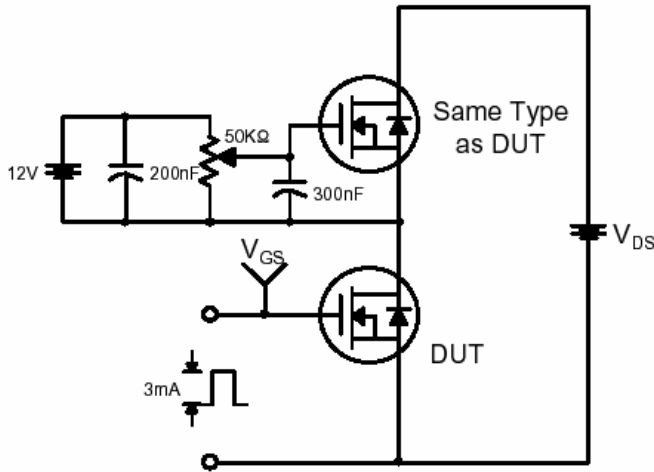


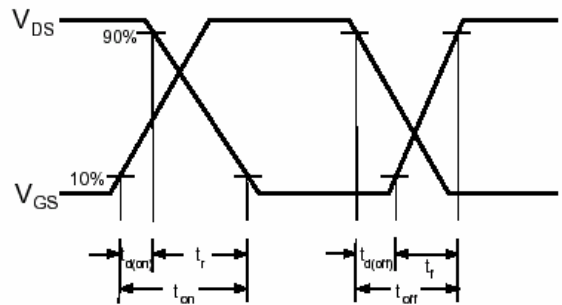
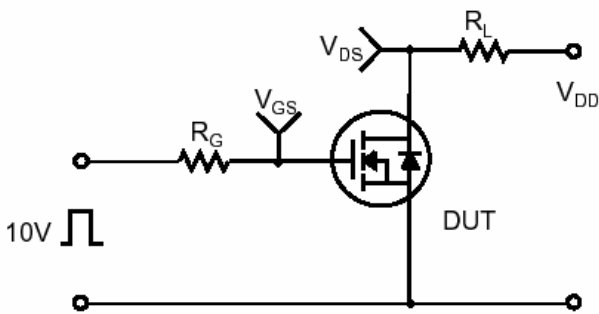
Figure 11 Transient Thermal Response Curve



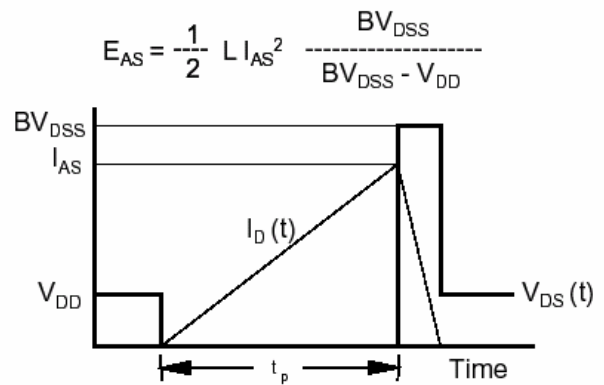
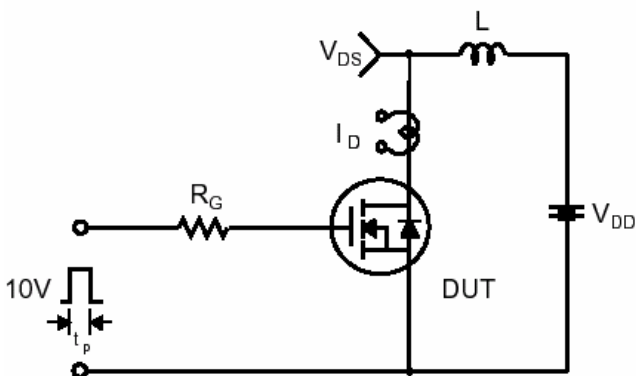
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms



### Unclamped Inductive Switching Test Circuit & Waveforms





## Peak Diode Recovery dv/dt Test Circuit & Waveforms

