

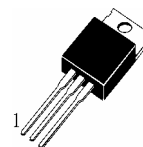
**APPLICATIONS**

Low Voltage high-Speed Switching.

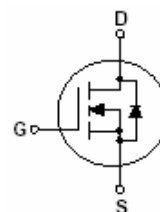
ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

T_{stg}	Storage Temperature.....	-55~175
T_j	Operating Junction Temperature	150
P_D	Allowable Power Dissipation($T_c=25^\circ\text{C}$).....	130W
V_{DSS}	Drain-Source Voltage	60V
V_{GSS}	Gate-Source Voltage	$\pm 20\text{V}$
I_D	Drain Current($T_c=25^\circ\text{C}$).....	50A

TO-220



1—G
2—D
3—S

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

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	60			V	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$
I_{DSS}	Zero Gate Voltage Drain Current			1	μA	$V_{DS}=60\text{V}$, $V_{GS}=0$
I_{GSS}	Gate -Source Leakage Current			± 100	nA	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$
$V_{GS(th)}$	Gate Threshold Voltage	2.0		4.0	V	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$
$R_{DS(on)}$	Static Drain-Source On-Resistance		0.018	0.023	Ω	$V_{GS}=10\text{V}$, $I_D=25\text{A}$
C_{iss}	Input Capacitance		880	1140	pF	$V_{DS}=25\text{V}$, $V_{GS}=0$, $f=1\text{MHz}$
C_{oss}	Output Capacitance		430	560	pF	
C_{rss}	Reverse Transfer Capacitance		110	140	pF	
$t_{d(on)}$	Turn - On Delay Time		60	130	nS	$V_{DD}=30\text{V}$, $I_D=25\text{A}$ $R_G=50\Omega^*$
t_r	Rise Time		185	380	nS	
$t_{d(off)}$	Turn - Off Delay Time		75	160	nS	
t_f	Fall Time		60	130	nS	$V_{DS}=48\text{V}$ $V_{GS}=10\text{V}$ $I_D=50\text{A}^*$
Q_g	Total Gate Charge		39	45	nC	
Q_{gs}	Gate-Source Charge		9.5		nC	
Q_{gd}	Gate-Drain Charge		13		nC	
I_S	Continuous Source Current			50	A	
V_{SD}	Diode Forward Voltage			1.5	V	$I_S=50\text{A}$, $V_{GS}=0$
$R_{th(j-c)}$	Thermal Resistance , Junction-to-Case			1.15	/W	

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



Fig 1. On-State Characteristics

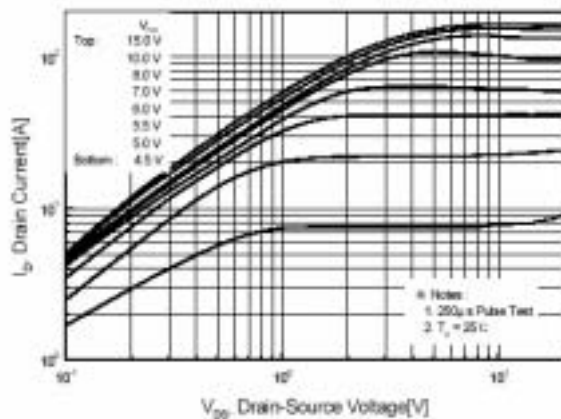


Fig 2. Transfer Characteristics

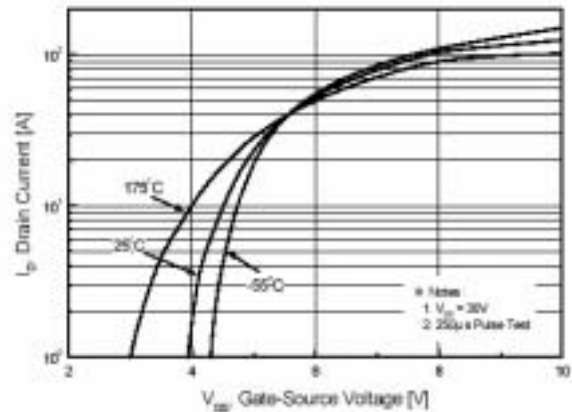


Fig 3. On Resistance Variation vs. Drain Current and Gate Voltage

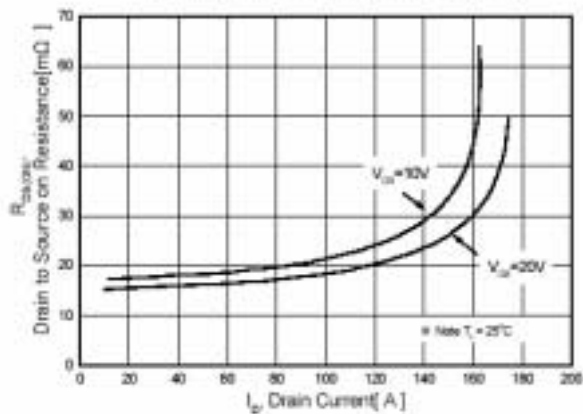


Fig 4. On State Current vs. Allowable Case Temperature

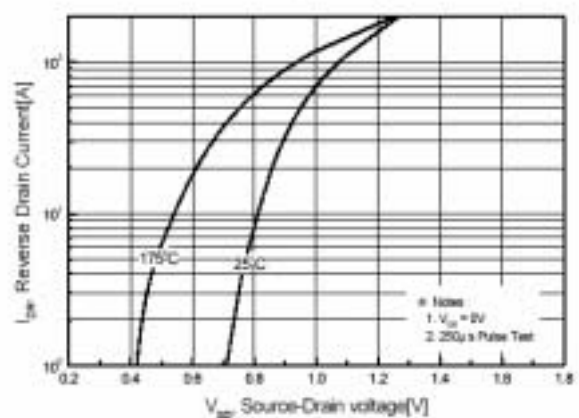


Fig 5. Capacitance Characteristics

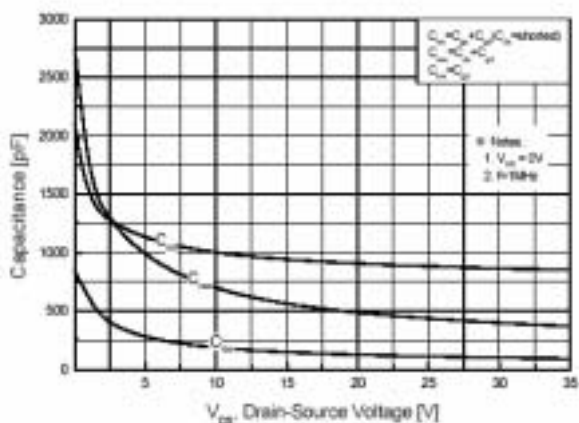


Fig 6. Gate Charge Characteristics

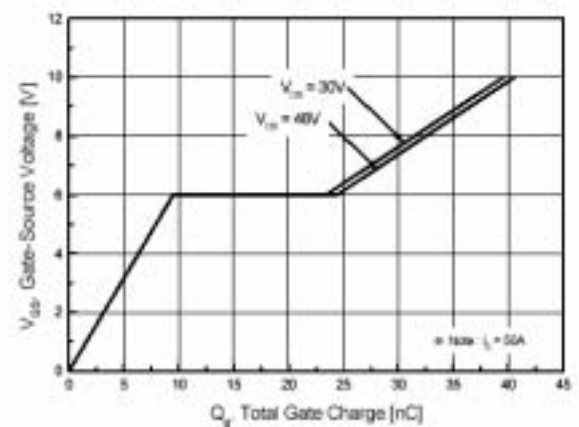




Fig 7. Breakdown Voltage Variation vs. Junction Temperature

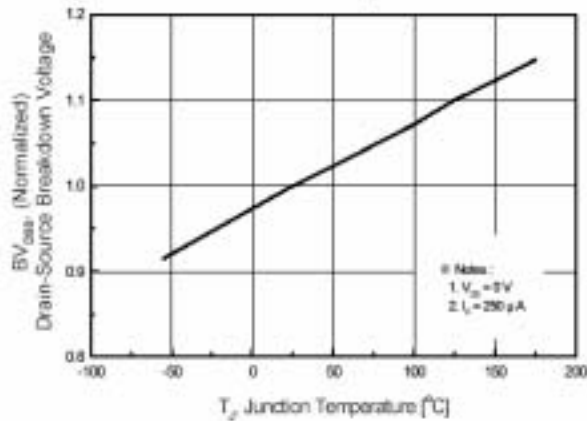


Fig 8. On-Resistance Variation vs. Junction Temperature

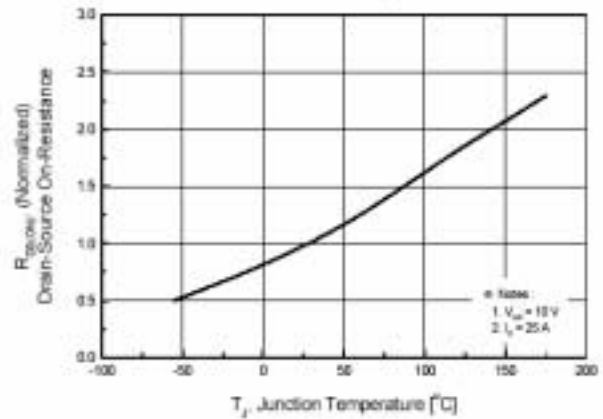


Fig 9. Maximum Safe Operating Area

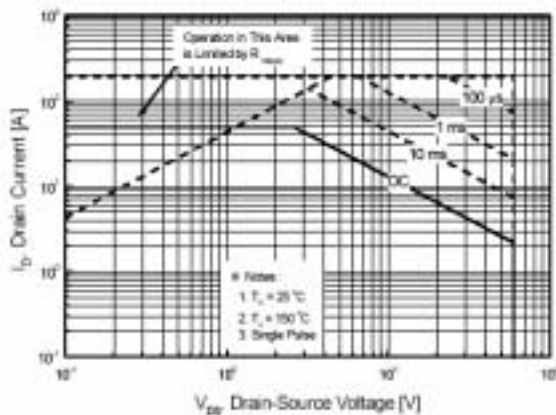


Fig 10. Maximum Drain Current vs. Case Temperature

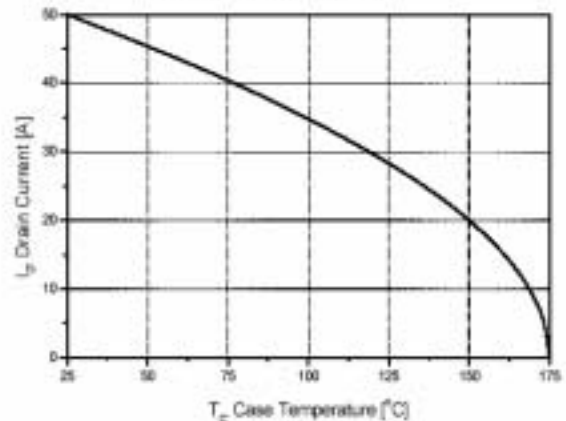


Fig 11. Transient Thermal Response Curve

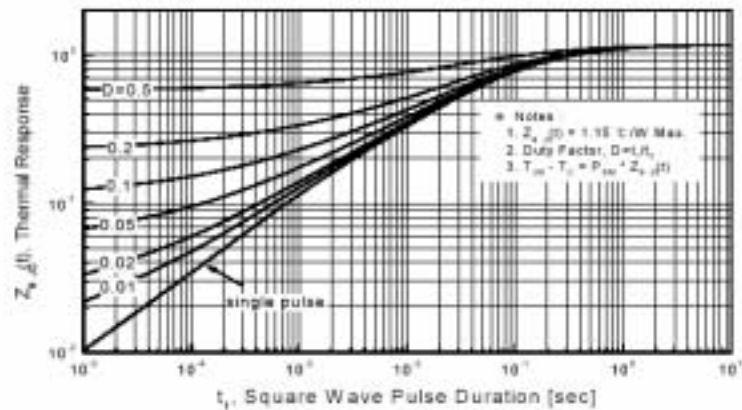




Fig. 12. Gate Charge Test Circuit & Waveforms

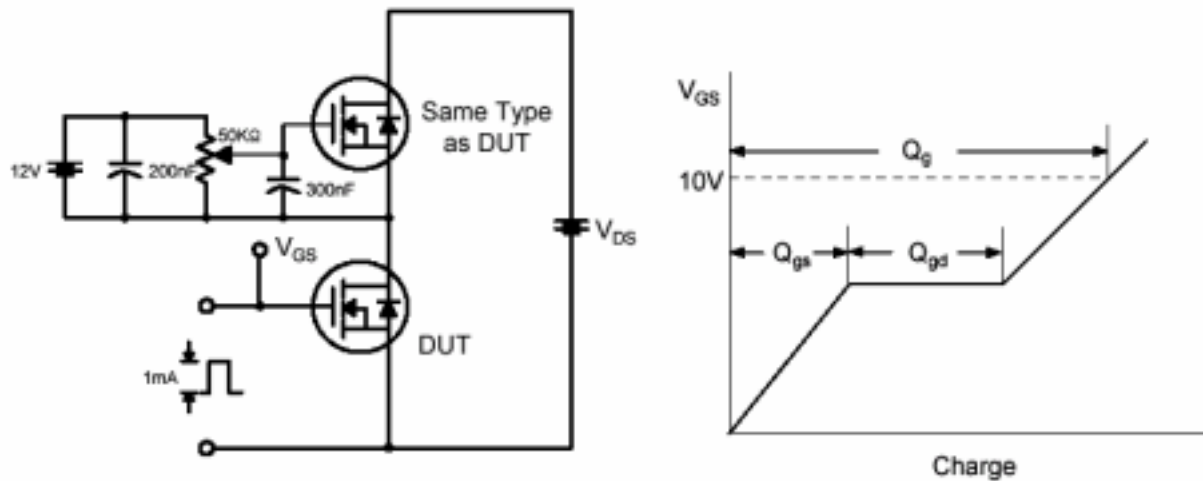


Fig 13. Switching Time Test Circuit & Waveforms

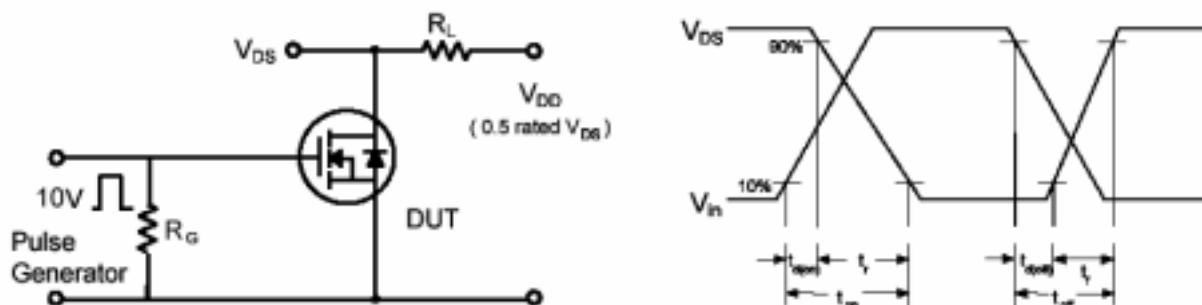


Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms

