

GE630**N-CHANNEL ENHANCEMENT MODE POWER MOSFET**

BV _{DSS}	200V
R _{DS(ON)}	400mΩ
I _D	9A

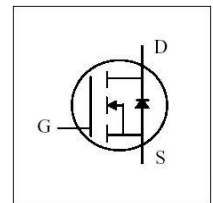
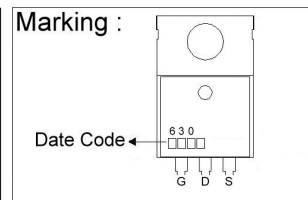
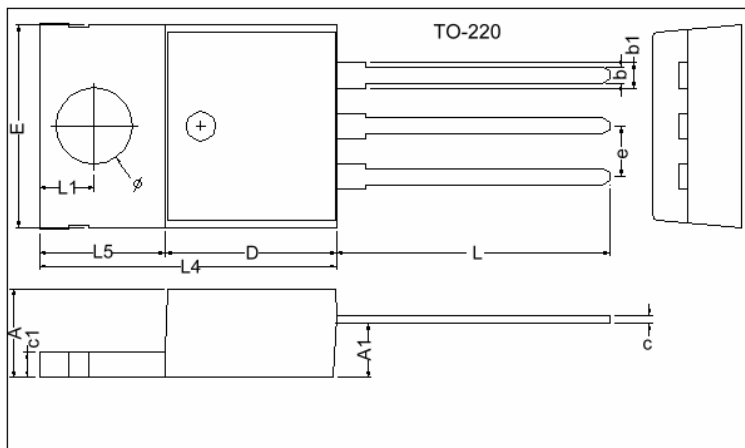
Description

The GE630 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-220 is universally preferred for all commercial-industrial applications at power dissipation level to approximately 50 watts. The through-hole version is available for low-profile applications.

Features

- *Dynamic dv/dt Rating
- *Repetitive Avalanche Rated
- *Simple Drive Requirement
- *Fast Switching

Package Dimensions

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c1	1.25	1.45
b	0.76	1.00	b1	1.17	1.47
c	0.36	0.50	L	13.25	14.25
D	8.60	9.00	e	2.54 REF.	
E	9.80	10.4	L1	2.60	2.89
L4	14.7	15.3	Ø	3.71	3.96
L5	6.20	6.60	A1	2.60	2.80

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	200	V
Gate-Source Voltage	V _{GS}	±30	V
Continuous Drain Current, V _{GS} @10V	I _D @T _C =25°C	9	A
Continuous Drain Current, V _{GS} @10V	I _D @T _C =100°C	5.7	A
Pulsed Drain Current ¹	I _{DM}	36	A
Total Power Dissipation	P _D @T _C =25°C	74	W
Linear Derating Factor		0.59	W/°C
Single Pulse Avalanche Energy ²	E _{AS}	240	mJ
Avalanche Current	I _{AR}	9	A
Repetitive Avalanche Energy	E _{AR}	7	mJ
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case Max.	R _{thj-c}	1.7	°C/W
Thermal Resistance Junction-ambient Max.	R _{thj-a}	62	°C/W

Electrical Characteristics(Tj = 25°C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	200	-	-	V	$V_{GS}=0, I_D=1mA$
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	0.248	-	V/°C	Reference to 25°C, $I_D=1mA$
Gate Threshold Voltage	$V_{GS(th)}$	2.0	-	4.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Forward Transconductance	g_{fs}	-	40	-	S	$V_{DS}=10V, I_D=5A$
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	$V_{GS}= \pm 30V$
Drain-Source Leakage Current(Tj=25°C)	I_{DSS}	-	-	10	uA	$V_{DS}=200V, V_{GS}=0$
Drain-Source Leakage Current(Tj=150°C)		-	-	100	uA	$V_{DS}=160V, V_{GS}=0$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	400	mΩ	$V_{GS}=10V, I_D=5A$
Total Gate Charge ³	Q_g	-	25	-	nC	$I_D=9A$ $V_{DS}=160V$ $V_{GS}=10V$
Gate-Source Charge	Q_{gs}	-	3.6	-		
Gate-Drain ("Miller") Change	Q_{gd}	-	14	-		
Turn-on Delay Time ³	$T_{d(on)}$	-	8	-	ns	$V_{DS}=100V$ $I_D=9A$ $V_{GS}=10V$ $R_G=10\Omega$ $R_D=11\Omega$
Rise Time	T_r	-	26	-		
Turn-off Delay Time	$T_{d(off)}$	-	34	-		
Fall Time	T_f	-	22	-		
Input Capacitance	C_{iss}	-	515	-	pF	$V_{GS}=0V$ $V_{DS}=25V$ $f=1.0MHz$
Output Capacitance	C_{oss}	-	90	-		
Reverse Transfer Capacitance	C_{rss}	-	40	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ³	V_{SD}	-	-	1.3	V	$I_S=9A, V_{GS}=0V, T_j=25^\circ C$
Continuous Source Current (Body Diode)	I_S	-	-	9	A	$V_D=V_G=0V, V_S=1.3V$
Pulsed Source Current (Body Diode) ¹	I_{SM}	-	-	36	A	

Notes: 1. Pulse width limited by safe operating area.

2. Staring $T_j=25^\circ C$, $V_{DD}=50V$, $L=4.5mH$, $R_G=25\Omega$, $I_{AS}=9A$.

3. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Characteristics Curve

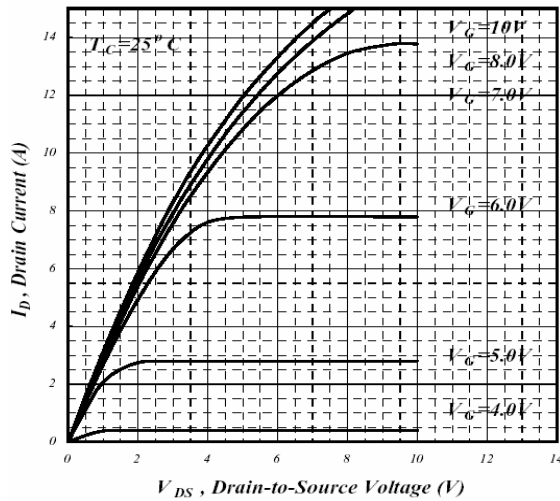


Fig 1. Typical Output Characteristics

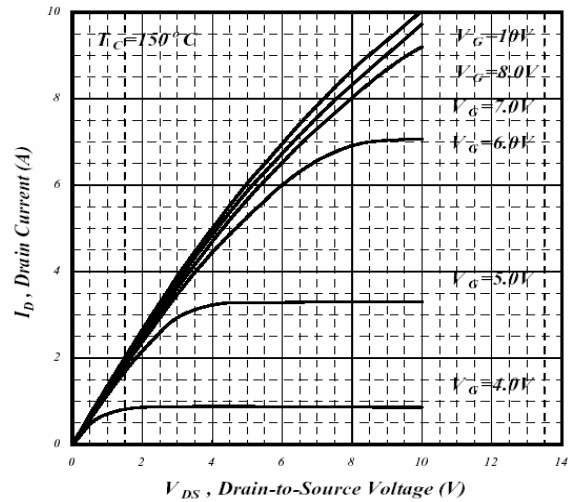


Fig 2. Typical Output Characteristics

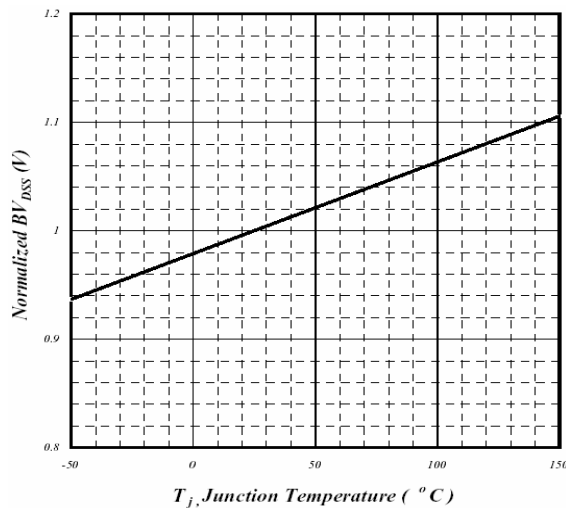


Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

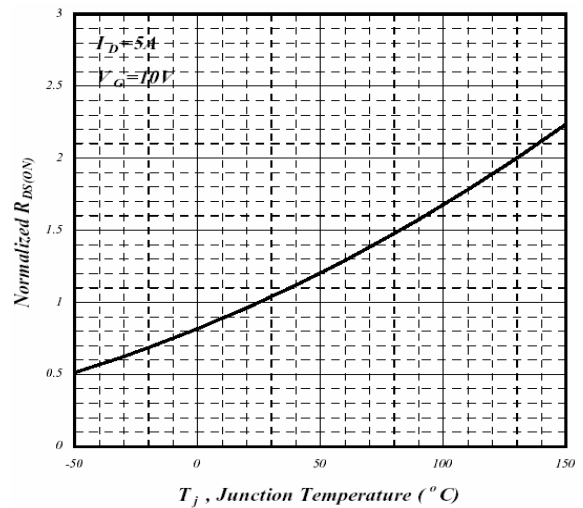


Fig 4. Normalized On-Resistance v.s. Junction Temperature

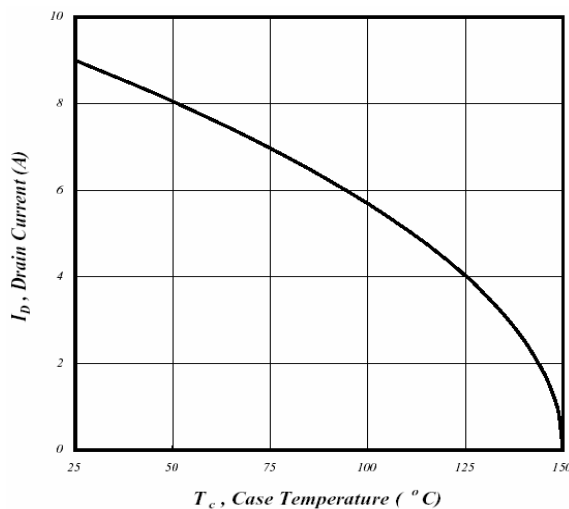


Fig 5. Maximum Drain Current v.s. Case Temperature

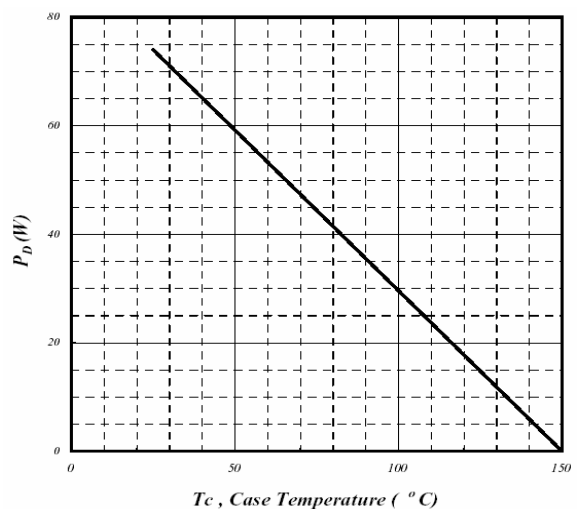


Fig 6. Type Power Dissipation

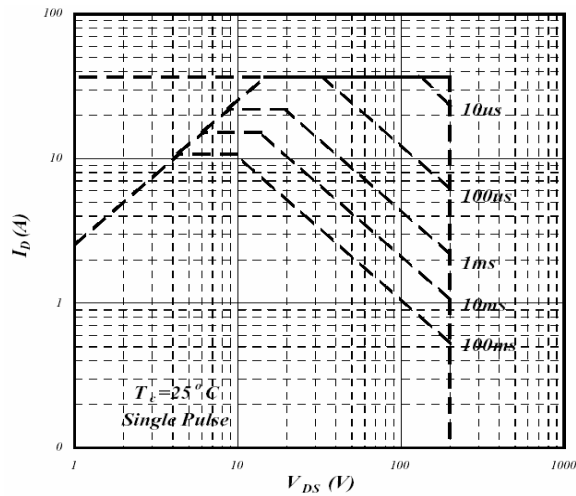


Fig 7. Maximum Safe Operating Area

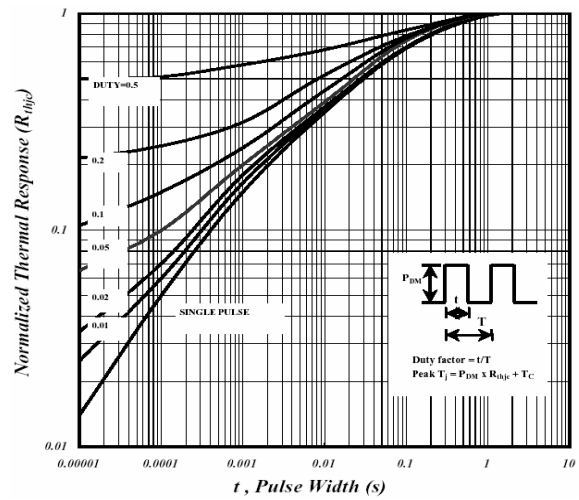


Fig 8. Effective Transient Thermal Impedance

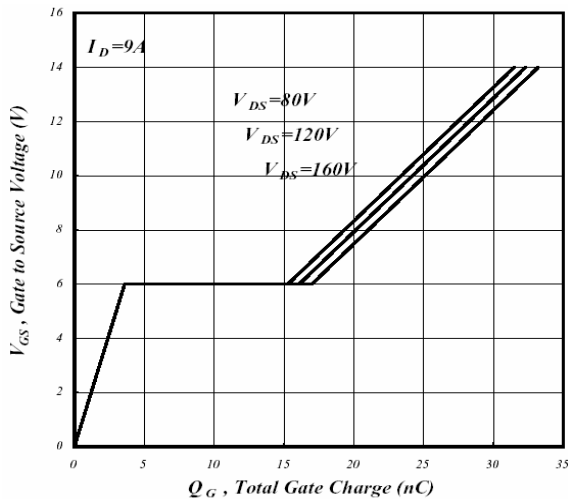


Fig 9. Gate Charge Characteristics

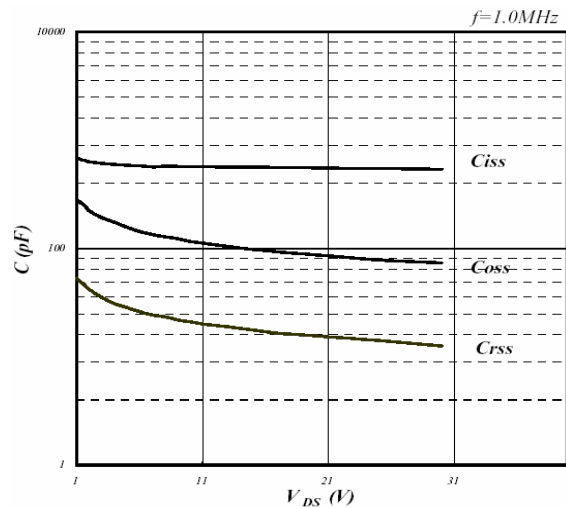


Fig 10. Typical Capacitance Characteristics

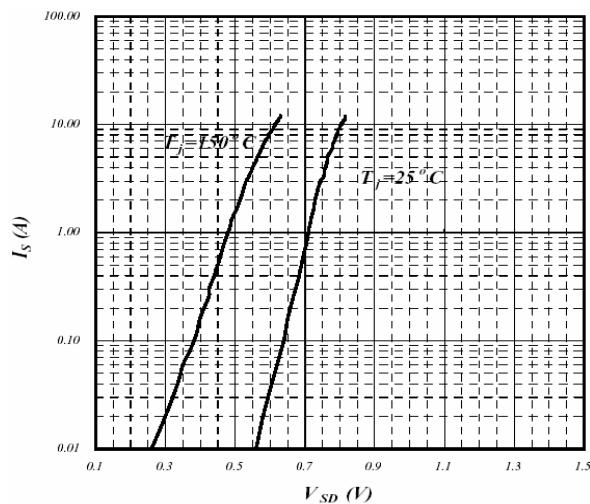


Fig 11. Forward Characteristics of Reverse Diode

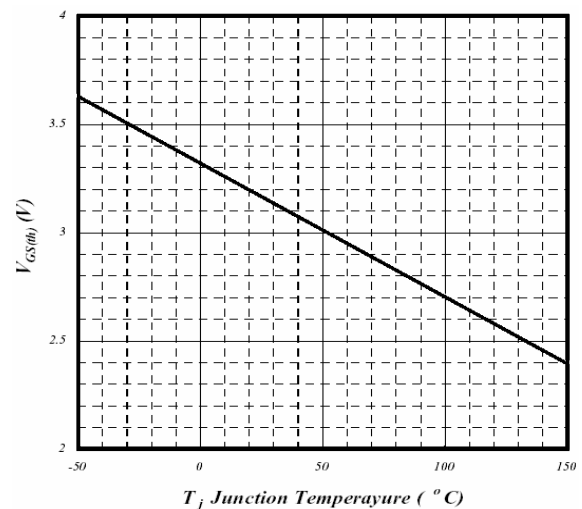


Fig 12. Gate Threshold Voltage v.s. Junction Temperature

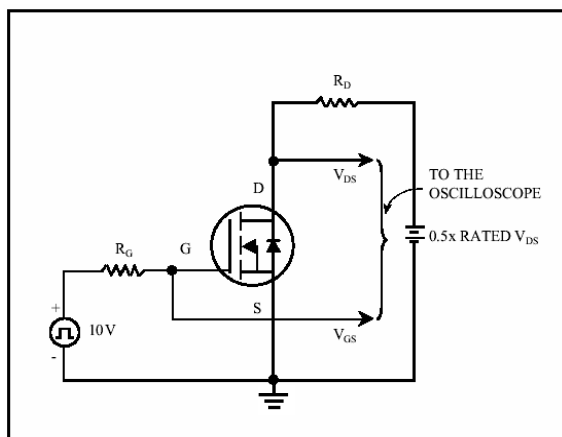


Fig 13. Switching Time Circuit

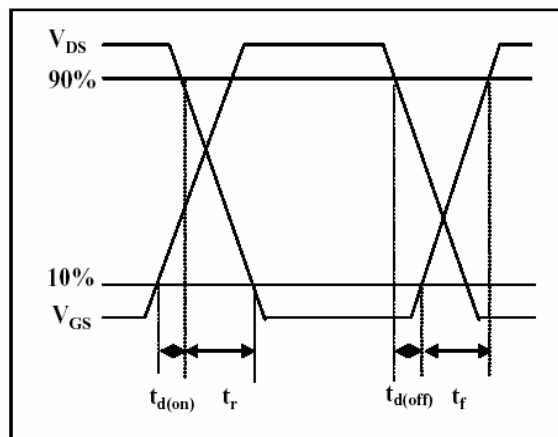


Fig 14. Switching Time Waveform

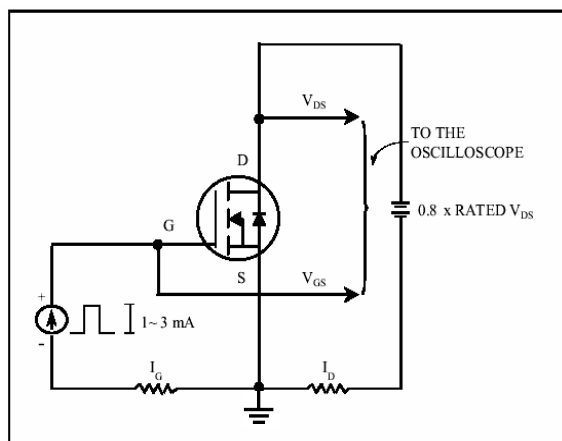


Fig 15. Gate Charge Circuit

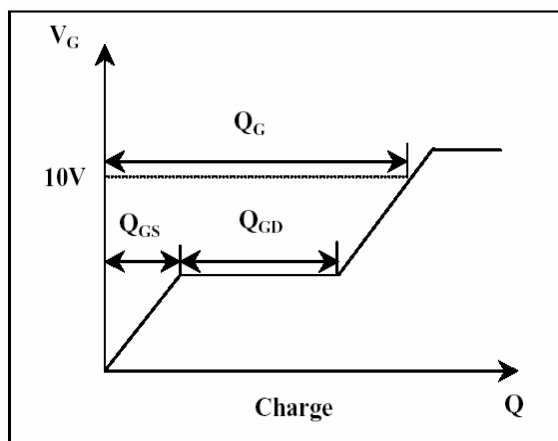


Fig 16. Gate Charge Waveform

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