Pb Free Plating Product

GTM CORPORATION

ISSUED DATE :2005/09/14
REVISED DATE :

GC01L60

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV_{DSS}	600V
$R_{DS(ON)}$	12Ω
I_D	160mA

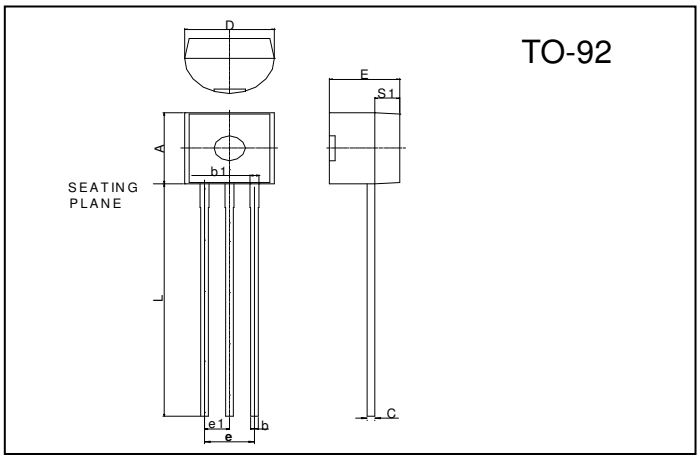
Description

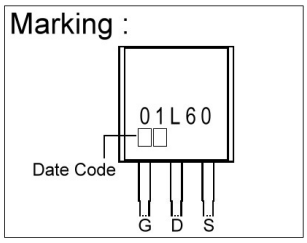
The GC01L06 utilized advanced processing techniques to achieve the possible on-resistance, extremely efficient and cost-effectiveness device.

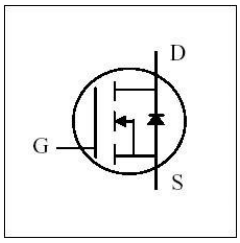
Features

*Simple Drive Requirement
*Low Gate Charge
*Fast Switching Characteristics

Package Dimensions







REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.45	4.7	D	4.44	4.7
S_1	1.02	-	E	3.30	3.81
b	0.36	0.51	L	12.70	-
b_1	0.36	0.76	e1	1.150	1.390
C	0.36	0.51	e	2.42	2.66

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current, V_{GS}@10V	I_D @T_A=25℃	160	mA
Continuous Drain Current, V_{GS}@10V	I_D @T_A=100℃	100	mA
Pulsed Drain Current[1]	I_{DM}	300	mA
Total Power Dissipation	P_D @T_C=25℃	0.83	W
Single Pulse Avalanche Energy[2]	E_{AS}	0.5	mJ
Avalanche Current	I_{AR}	1	A
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient Max.	Rthj-a	150	℃/W

Electrical Characteristics(Tj = 25℃ Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	600	-	-	V	V_{GS}=0, I_D=1mA
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle Tj$	-	0.8	-	V/℃	Reference to 25℃, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	2.0	-	4.0	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance	g_{fs}	-	0.8	-	S	V_{DS}=10V, I_D=0.5A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±30V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	10	uA	V_{DS}=600V, V_{GS}=0
Drain-Source Leakage Current(Tj=150℃)		-	-	100	uA	V_{DS}=480V, V_{GS}=0
Static Drain-Source On-Resistance[3]	$R_{DS(ON)}$	-	-	12	Ω	V_{GS}=10V, I_D=0.5A
Total Gate Charge[3]	Q_g	-	5	8	nC	I_D=0.5A V_{DS}=480V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	1.5	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	0.7	-		
Turn-on Delay Time[3]	$T_{d(on)}$	-	8	-	ns	V_{DD}=300V I_D=1A V_{GS}=10V R_G=10Ω R_D=300Ω
Rise Time	T_r	-	5	-		
Turn-off Delay Time	$T_{d(off)}$	-	13	-		
Fall Time	T_f	-	9	-		
Input Capacitance	C_{iss}	-	260	420	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	20	-		
Reverse Transfer Capacitance	C_{rss}	-	3	-		
Gate Resistance	R_g	-	3	-	Ω	f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[3]	V_{SD}	-	-	1.2	V	I_S=160mA, V_{GS}=0V
Reverse Recovery Time[3]	T_{rr}	-	345	-	ns	I_S=1A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	1	-	nC	

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

2. Staring Tj=25℃, V_{DD}=50V, L=1mH, R_G=25Ω, I_{AS}=1A.

3. Pulse width≦300us, duty cycle≦2%.

Characteristics Curve

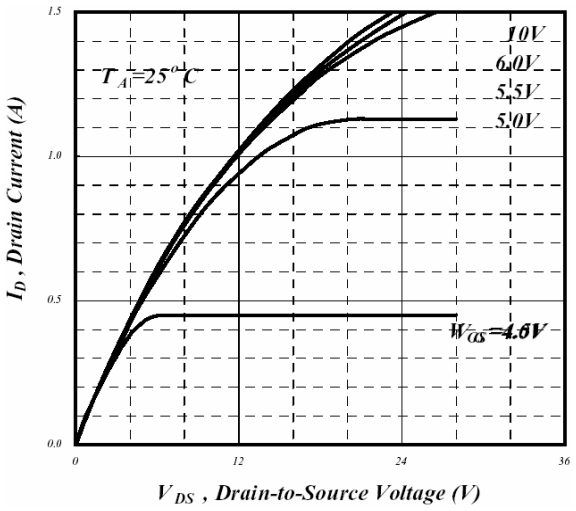


Fig 1. Typical Output Characteristics

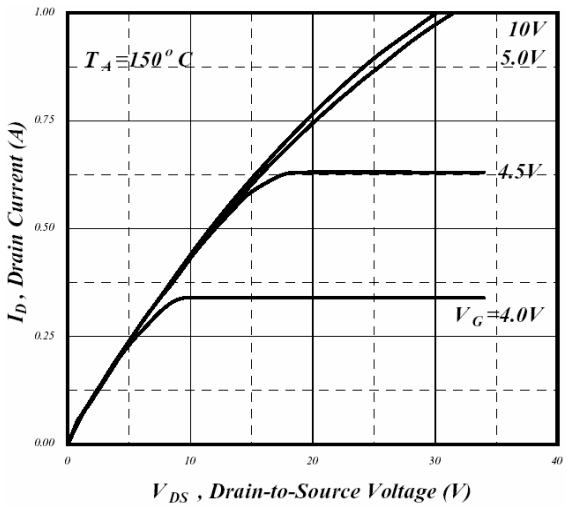


Fig 2. Typical Output Characteristics

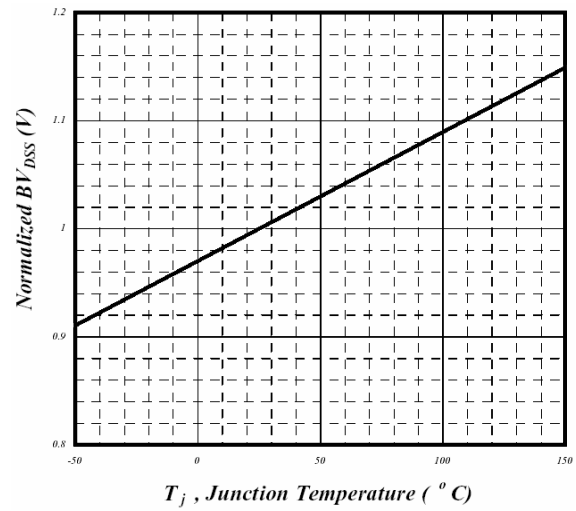


Fig 3. Normalized BVDSS v.s. Junction Temperature

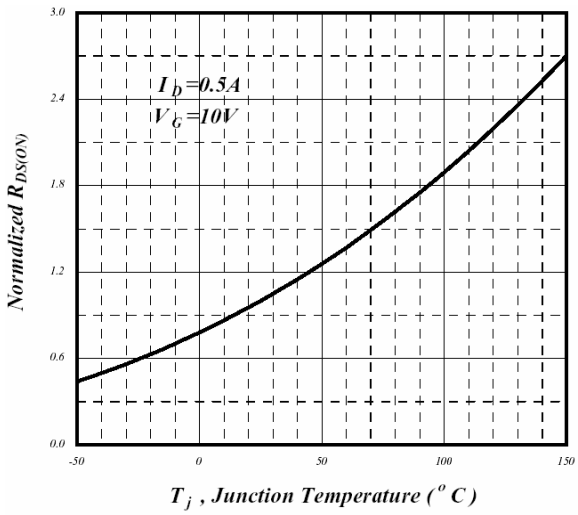


Fig 4. Normalized On-Resistance v.s. Junction Temperature

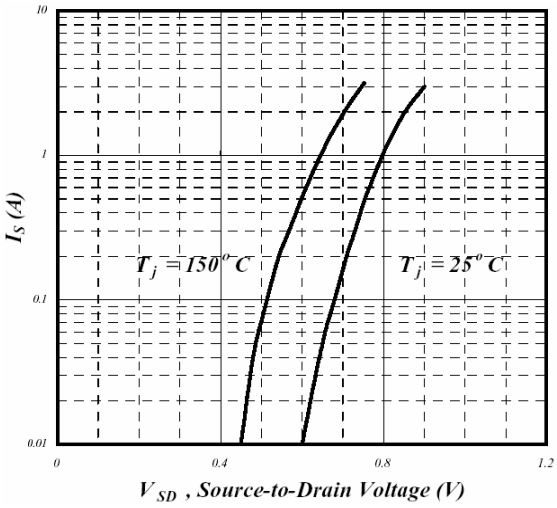


Fig 5. Forward Characteristic of Reverse Diode

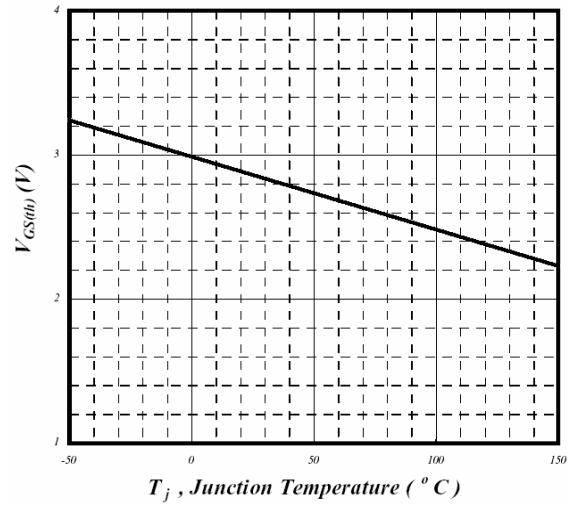


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

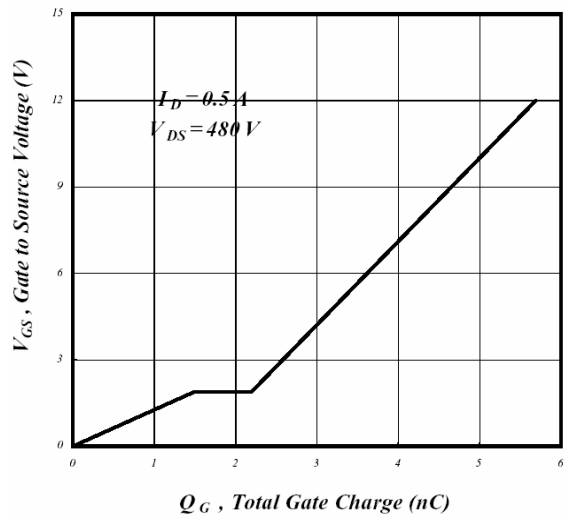


Fig 7. Gate Charge Characteristics

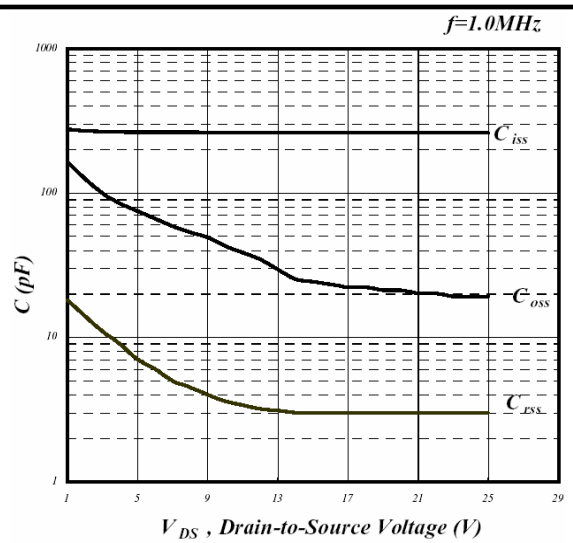


Fig 8. Typical Capacitance Characteristics

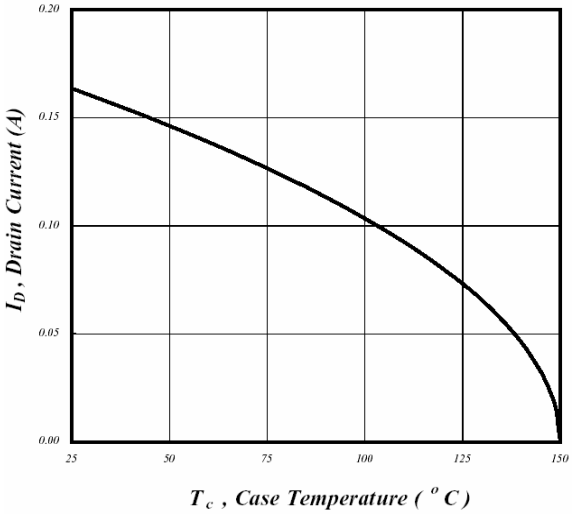


Fig 9. Maximum Drain Current v.s. Case Temperature

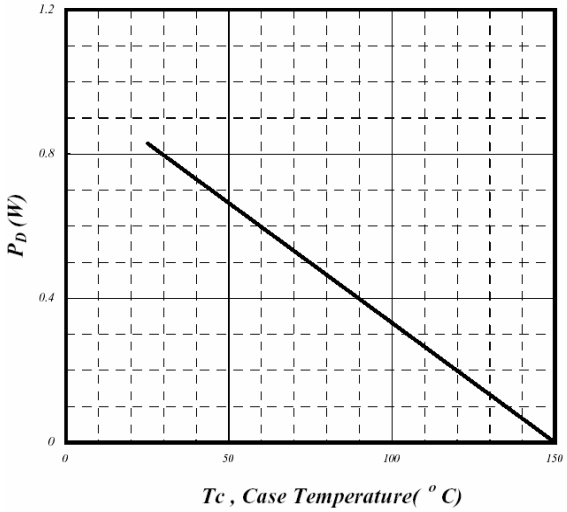


Fig 10. Type Power Dissipation

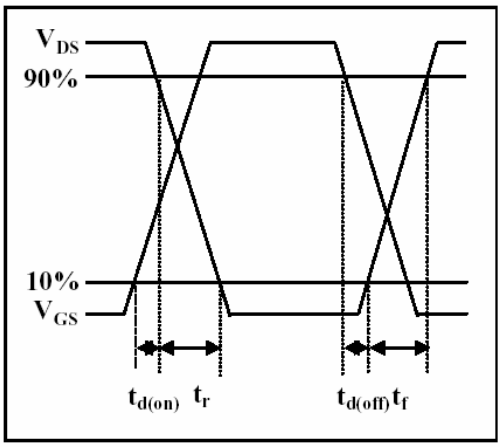


Fig 11. Switching Time Waveform

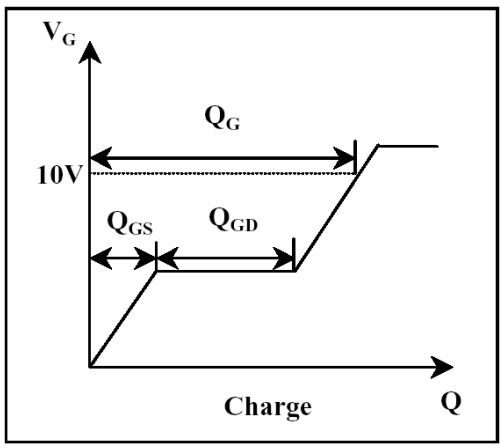


Fig 12. Gate Charge Waveform

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