

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The GM3055 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOT-89 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

FEATURES

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

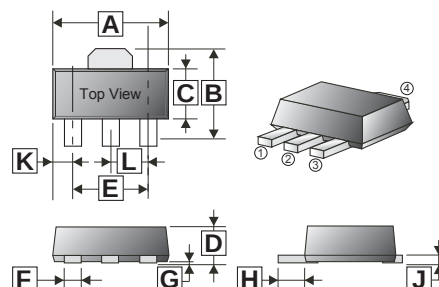
MARKING



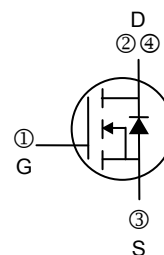
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-89	1K	7 inch

SOT-89



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.60	G	-	-
B	4.05	4.25	H	0.89	1.20
C	2.40	2.60	J	0.35	0.41
D	1.40	1.60	K	0.70	0.80
E	3.00 REF.		L	1.50 REF.	
F	0.40	0.52			



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	$T_A = 25^\circ\text{C}$	I_D	5.8	A
	$T_A = 70^\circ\text{C}$		4.7	A
Pulsed Drain Current ²		I_{DM}	30	A
Power Dissipation ³		P_D	1.5	W
Linear Derating Factor			0.0118	W / $^\circ\text{C}$
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient ¹ (Max).		$R_{\theta JA}$	85	$^\circ\text{C} / \text{W}$
Thermal Resistance Junction-Case ¹ (Max).		$R_{\theta JC}$	30	$^\circ\text{C} / \text{W}$

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Drain-Source Breakdown Voltage		BV _{DSS}	30	-	-	V	V _{GS} =0, I _D =250μA
Breakdown Voltage Temperature Coefficient		ΔBV _{DSS} /ΔT _J	-	0.021	-	V / °C	Reference to 25°C, I _D =1mA
Gate Threshold Voltage		V _{GS(th)}	1.2	-	2.5	V	V _{DS} =V _{GS} , I _D =250μA
Gate-Source Leakage Current		I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
Drain-Source Leakage Current	T _J =25°C	I _{DSS}	-	-	1	μA	V _{DS} =24V, V _{GS} =0
	T _J =55°C		-	-	5		V _{DS} =24V, V _{GS} =0
Static Drain-Source On-Resistance ²		R _{DS(ON)}	-	-	28	mΩ	V _{GS} =10V, I _D =5A
			-	-	40		V _{GS} =4.5V, I _D =4A
Total Gate Charge ²		Q _g	-	6	8.4	nC	I _D =5A
Gate-Source Charge		Q _{gs}	-	2.5	3.5		V _{DS} =15V
Gate-Drain (“Miller”) Charge		Q _{gd}	-	2.1	2.9		V _{GS} =4.5V
Turn-on Delay Time ²		T _{d(on)}	-	2.4	4.8	nS	V _{DD} =15V
Rise Time		T _r	-	7.8	14		I _D =5A
Turn-off Delay Time		T _{d(off)}	-	22	44		V _{GS} =10V
Fall Time		T _f	-	4	8		R _G =3.3Ω R _D =1.9Ω
Input Capacitance		C _{iss}	-	572	800	pF	V _{GS} =0
Output Capacitance		C _{oss}	-	81	112		V _{DS} =15V
Reverse Transfer Capacitance		C _{rss}	-	65	91		f=1.0 MHz
Source-Drain Diode							
Forward On Voltage ²		V _{SD}	-	-	1.2	V	I _S =3A, V _{GS} =0, T _J =25°C
Continuous Source Current(Body Diode) ^{1,4}		I _S	-	-	5.8	A	V _D =V _G =0, V _S =1.2V
Pulsed Source Current(Body Diode) ^{2,4}		I _{SM}	-	-	30	A	

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
3. The power dissipation is limited by 150°C junction temperature
4. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

CHARACTERISTIC CURVES

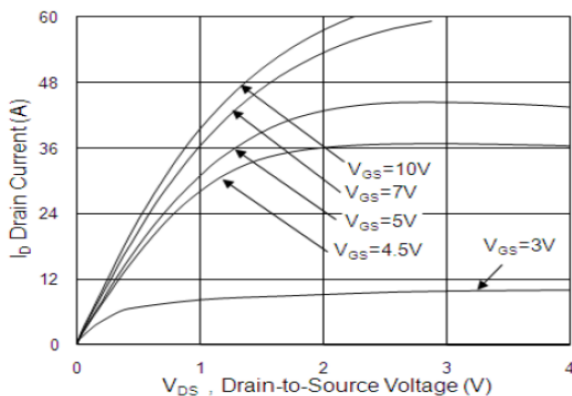


Fig.1 Typical Output Characteristics

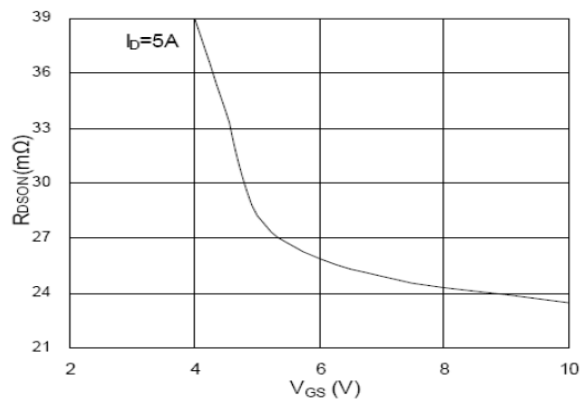


Fig.2 On-Resistance vs. G-S Voltage

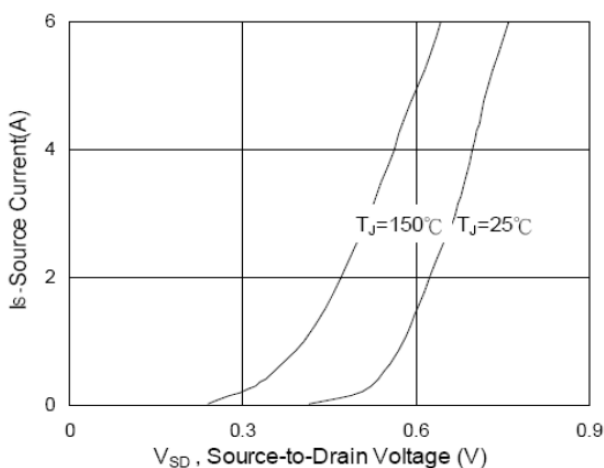


Fig.3 Forward Characteristics Of Reverse

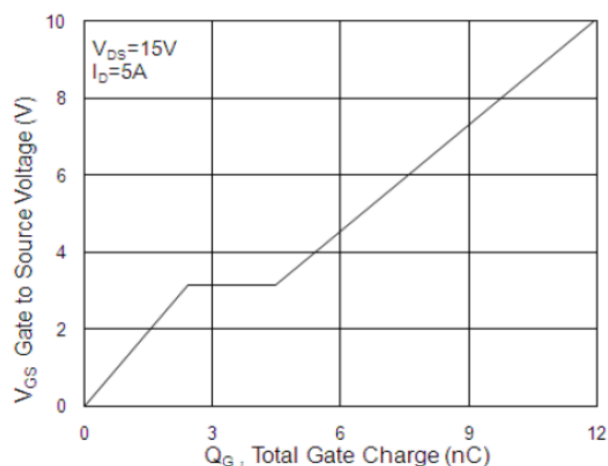


Fig.4 Gate-Charge Characteristics

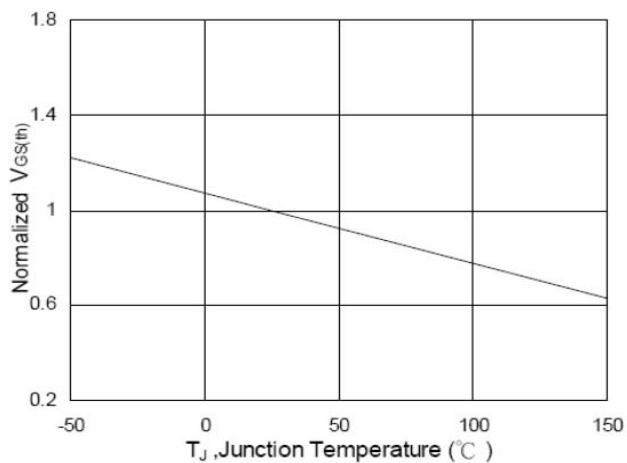


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

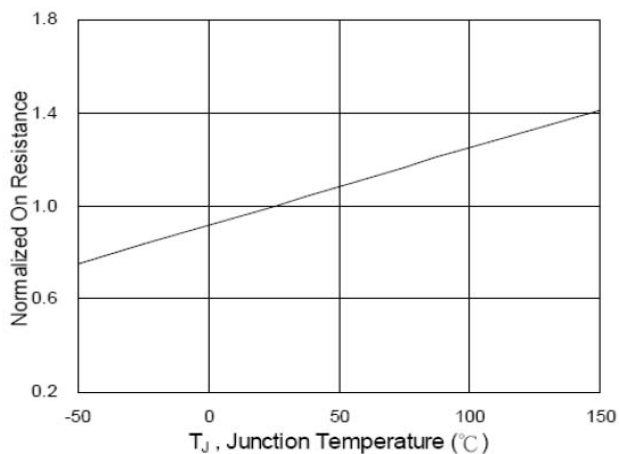


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

CHARACTERISTIC CURVES

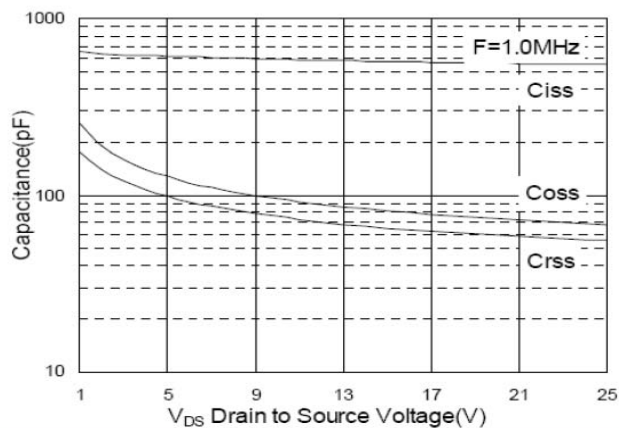


Fig.7 Capacitance

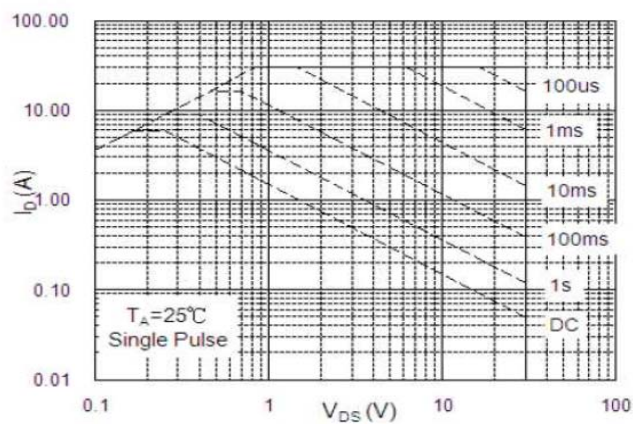


Fig.8 Safe Operating Area

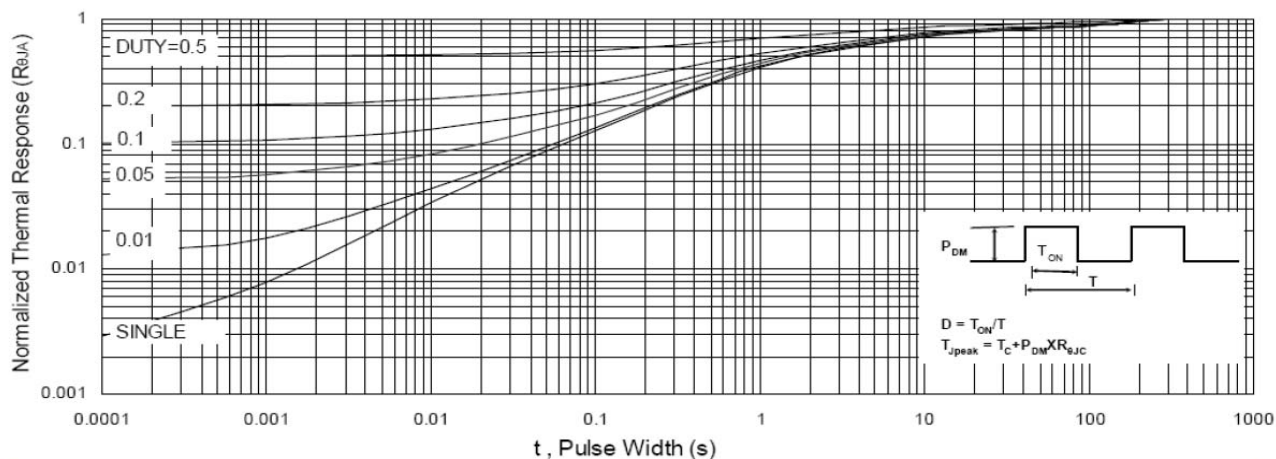


Fig.9 Normalized Maximum Transient Thermal Impedance

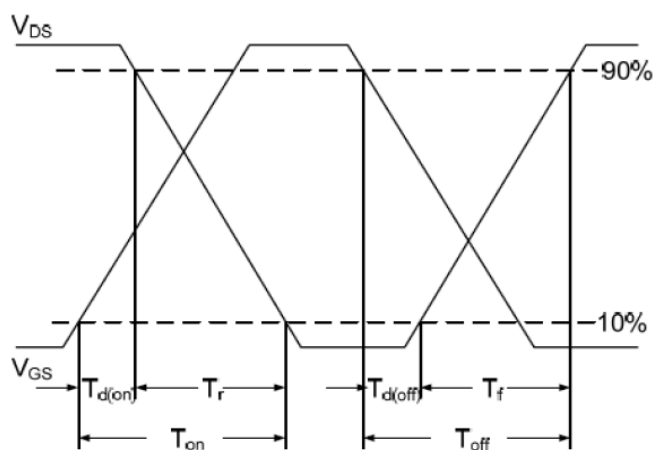


Fig.10 Switching Time Waveform

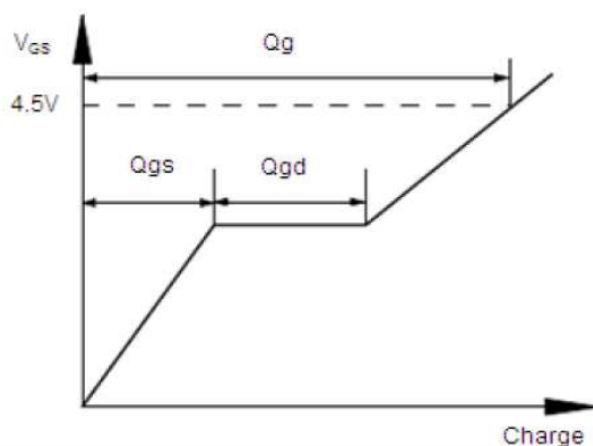


Fig.11 Gate Charge Waveform