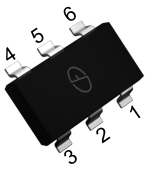
P-Channel -30V (D-S) Power MOSFET

Features

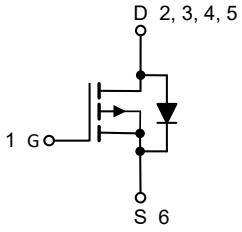
- 100% Avalanche Tested
- Halogen Free, Pb-Free
- RoHS Compliant



SOT-23-6

Applications

- Relay driver
- Switching circuits
- High-side load switch
- High-speed line driver



Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain Source Voltage		V_{DS}	-30	V
Gate Source Voltage		V_{GS}	±25	V
Drain Current, Continuous V_{GS}=-10V	T_C=25°C	I_D	-4	A
Drain Current, Pulsed *(Note 1)*		I_{DM}	-25	A
Power Dissipation	T_C=25°C	P_D	1.7	W
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Single pulse; t_p ≤ 1us.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case	R_{thJC}	30	°C/W
Thermal Resistance Junction to Ambient *(Note 2)*	R_{thJA}	75	°C/W

Note 2: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a 25°C still air environment.

Electrical Characteristics (T_A =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V	--	--	-1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=-250uA	-1.0	--	-3.0	V
Gate Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance *(Note 3)*	$R_{DS(on)}$	V_{GS}=-10V, I_D=-4A	--	45	51	mΩ
		V_{GS}=-4.5V, I_D=-3.4A	--	65	85	
Total Gate Charge	Q_g	$V_{GS(off)}$=0V, $V_{GS(on)}$=-5V, V_{DS}=-5V, I_D=-4A	--	7.1	--	nC
Gate-Source Charge	Q_{gs}		--	0.86	--	
Gate-Drain Charge	Q_{gd}		--	3.9	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=-10V, V_{DD}=-15V, R_G=6Ω, I_D=-1A	--	8.9	--	ns
Turn-on Rise Time	t_r		--	4.0	--	
Turn-off Delay Time	$t_{d(off)}$		--	22.6	--	
Turn-off Fall Time	t_f		--	5.5	--	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz	--	520	--	pF
Output Capacitance	C_{oss}		--	94	--	
Reverse Transfer Capacitance	C_{rss}		--	73	--	

Reverse Diode Characteristics (T_A =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I_{SD}	T_C=25°C	--	--	-4	A
Diode Forward Voltage *(Note 3)*	V_{SD}	I_F=-1A, V_{GS}=0V	--	-0.8	-1.2	V
Reverse Recovery Time	T_{rr}	I_F =-4A, di/dt = 100 A/μs	--	10.3	--	ns
Reverse Recovery Charge	Q_{rr}		--	4.3	--	nC

Note 3: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.

Typical Characteristics Curves (T_A = 25℃ unless otherwise noted)

Fig.1 - Output Characteristics

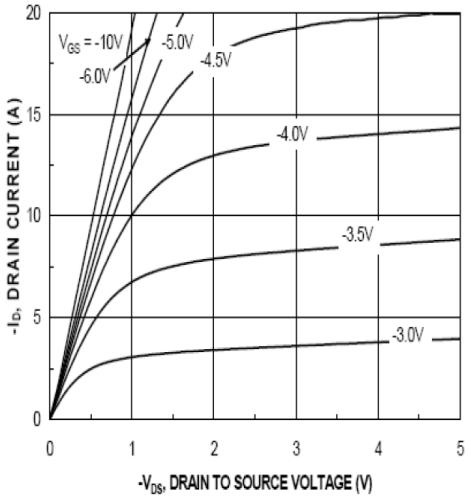


Fig.2 - Transfer Characteristics

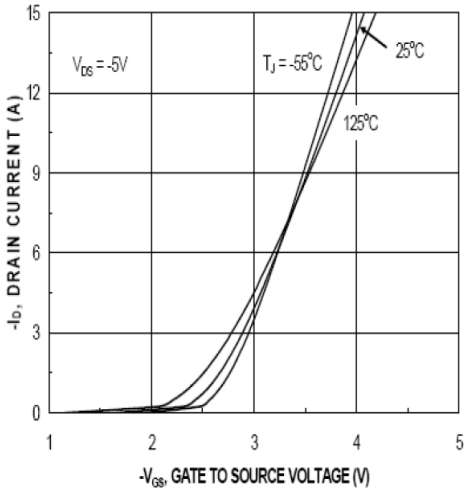


Fig.3 - Drain-Source On-Resistance

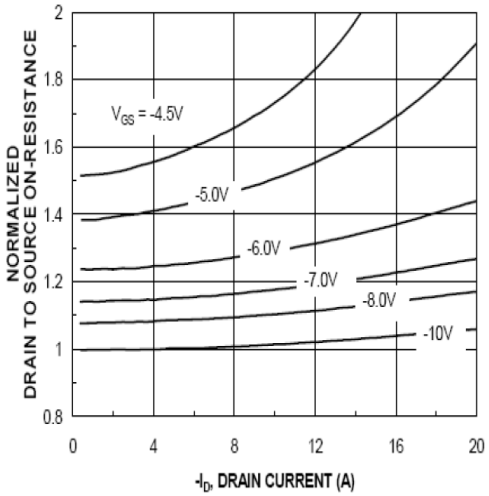


Fig.4 - Normalized On-Resistance

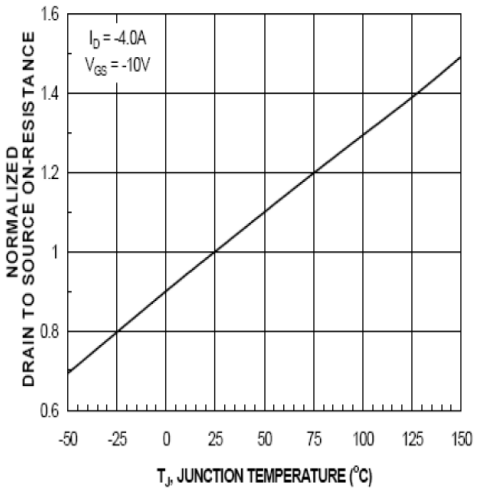


Fig.5 - Drain-Source On-Resistance

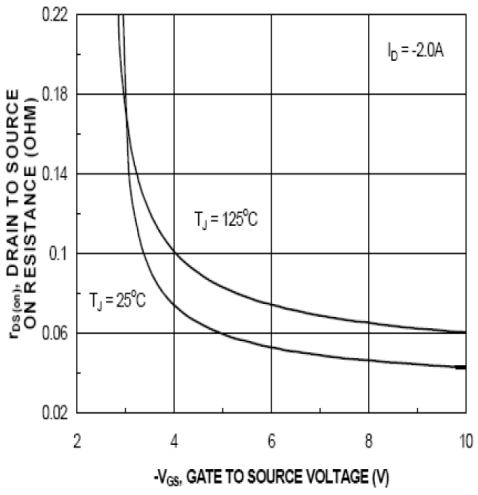
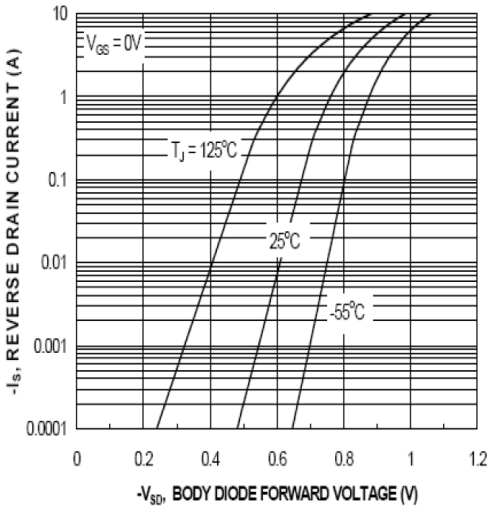


Fig.6 - Source- Drain Diode Forward



Typical Characteristics Curves (T_A = 25℃ unless otherwise noted)

Fig.7 - Capacitance

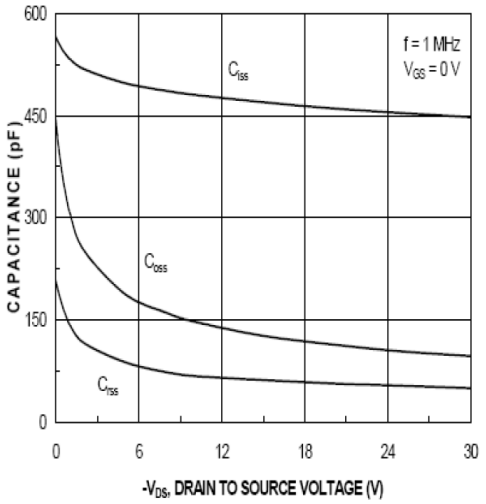


Fig.8 - Gate charge

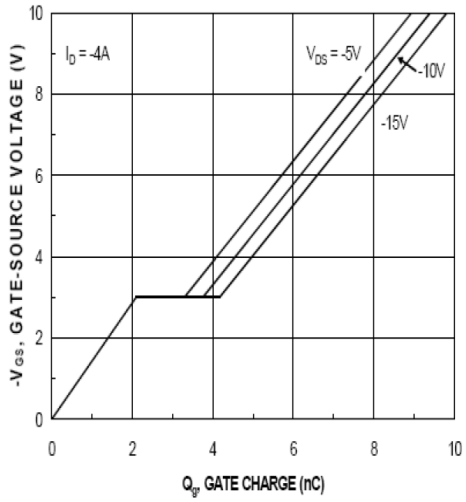


Fig.9 - Safe Operating Area

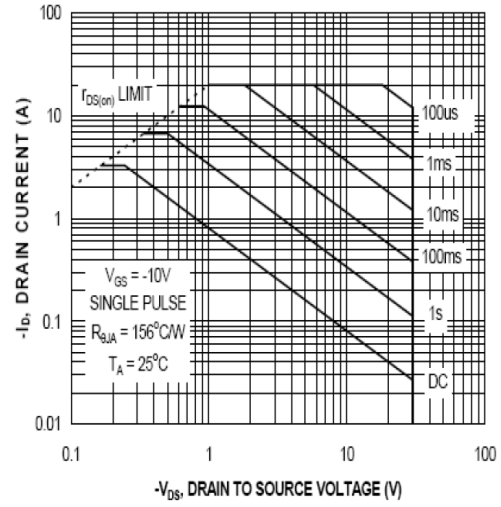


Fig.10 - Power Dissipation

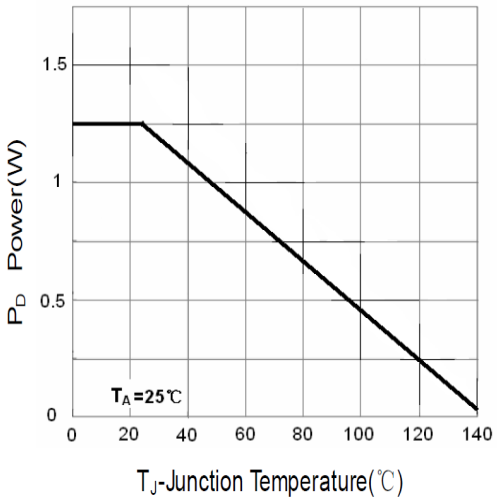


Fig.11 - Drain Current

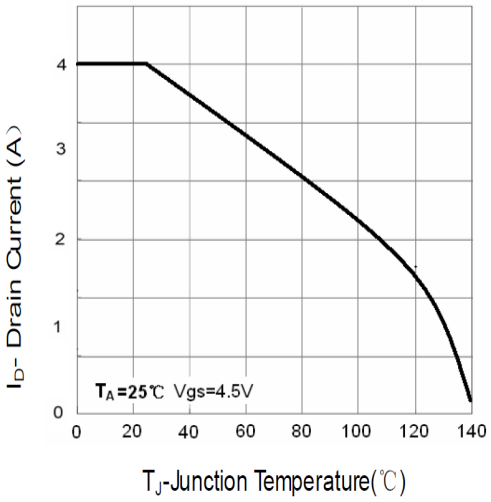
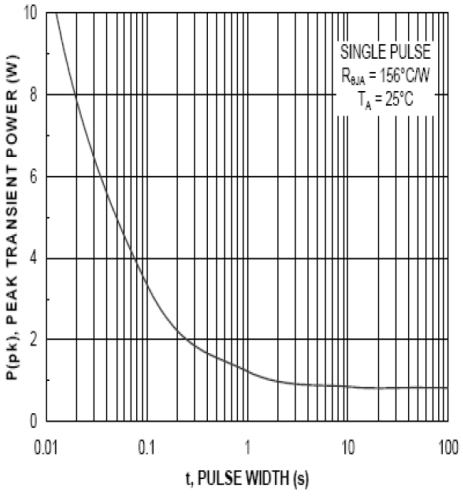
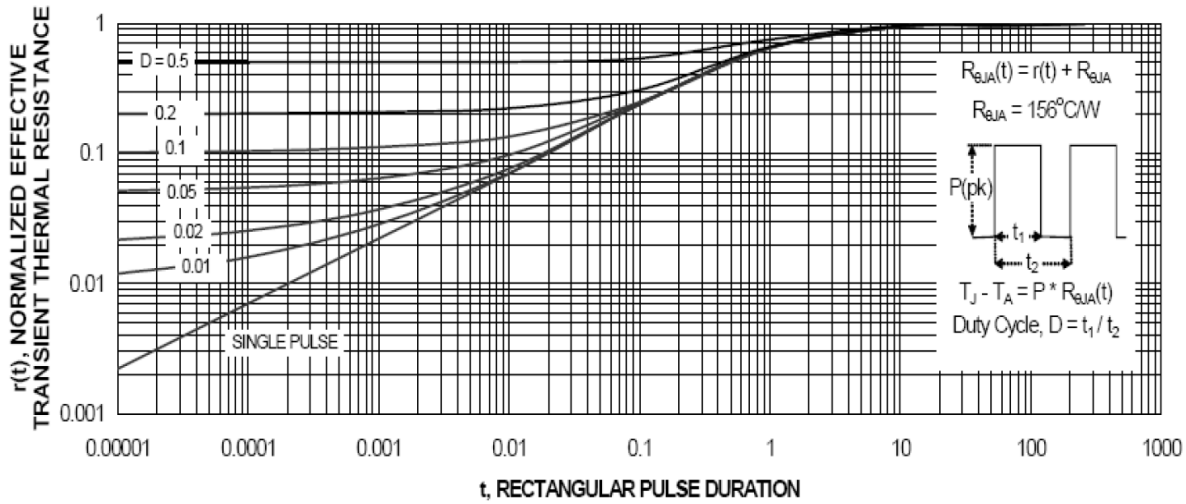


Fig.12 - Single Pulse Maximum Power Dissipation



Typical Characteristics Curves (TA = 25°C unless otherwise noted)

Fig.13 - Normalized Thermal Impedance, Junction-Case



Package Outline Dimensions (Unit: millimeters)

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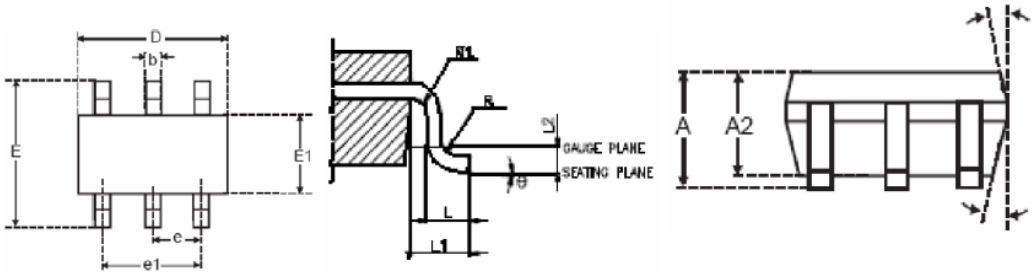
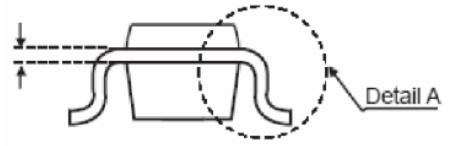
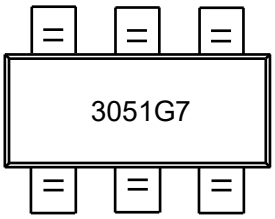




SYMBOLS	MILLMETERS		
	MIN.	NOM.	MAX.
A			1.45
A1			0.15
A2	0.90	1.15	1.30
b	0.30		0.50
c	0.08		0.22
D		2.90 BSC.	
E		2.80 BSC.	
E1		1.60 BSC.	
e		0.95 BSC.	
e1		1.90 BSC.	
L	0.30	0.45	0.60
L1		0.60 REF	
L2		0.25 BSC.	
R	0.10		
R1	0.10		0.25
θ	0°	4°	8°
θ1	5°	10°	15°

Marking Outline



Part Name: GMP3051G7

1. P/N Mark: 3051G7

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