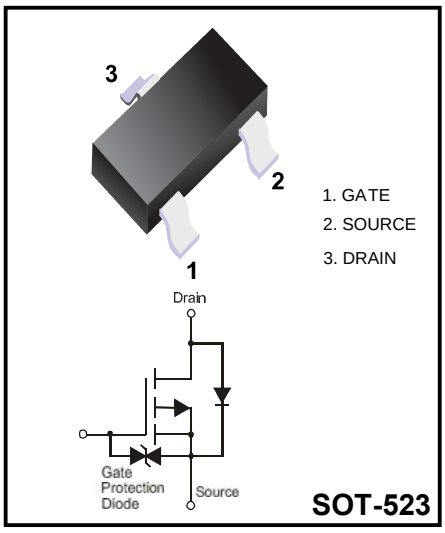
P-Channel Enhancement Mode MOSFET



Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Lead Free By Design/RoHS Compliant (Note 2)
- ESD Protected Up To 3kV

Marking Code	
DMG1013T	PA1

Absolute Maximum Ratings (Ta=25℃)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-20	V
Gate-Source Voltage			V_{GSS}	±6	V
Drain Current (Note 1)	Steady State	T_A = 25°C T_A = 85°C	I_D	-0.46 -0.33	A
Pulsed Drain Current			I_{DM}	-6	A
Characteristic			**Symbol**	**Value**	**Units**
Total Power Dissipation (Note 1)			P_D	0.27	W
Thermal Resistance, Junction to Ambient			$R_{\theta JA}$	461	°C/W
Operating and Storage Temperature Range			T_J, T_{STG}	-55 to +150	°C

Notes: 1. Device mounted on FR-4 PCB.
2. No purposefully added lead.

Electrical Characteristics (Ta=25℃ unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	-	-	V	V_{GS} = 0V, I_D = -250μA
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	-	-	-100	nA	V_{DS} = -20V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±2.0	μA	V_{GS} = ±4.5V, V_{DS} = 0V
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage	$V_{GS(th)}$	-0.5	-	-1.0	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	0.5	0.7	Ω	V_{GS} = -4.5V, I_D = -350mA
			0.7	0.9		V_{GS} = -2.5V, I_D = -300mA
			1.0	1.3		V_{GS} = -1.8V, I_D = -150mA
Forward Transfer Admittance	$\|Y_{fs}\|$	-	0.9	-	S	V_{DS} = -10V, I_D = -250mA
Diode Forward Voltage (Note 4)	V_{SD}		-0.8	-1.2	V	V_{GS} = 0V, I_S = -150mA
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	-	59.76	-	pF	V_{DS} = -16V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	12.07	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	6.36	-	pF	
Total Gate Charge	Q_g	-	622.4	-	pC	V_{GS} = -4.5V, V_{DS} = -10V, I_D = -250mA
Gate-Source Charge	Q_{gs}	-	100.3	-	pC	
Gate-Drain Charge	Q_{gd}	-	132.2	-	pC	
Turn-On Delay Time	$t_{D(on)}$	-	5.1	-	ns	V_{DD} = -10V, V_{GS} = -4.5V, R_L = 47Ω, R_G = 10Ω, I_D = -200mA
Turn-On Rise Time	t_r	-	8.1	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	28.4	-	ns	
Turn-Off Fall Time	t_f	-	20.7	-	ns	

Notes: 4. Short duration pulse test used to minimize self-heating effect.

Typical Characteristics

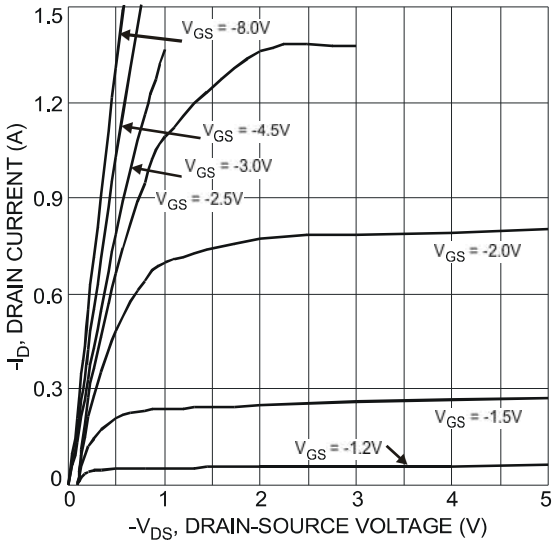


Fig. 1 Typical Output Characteristic

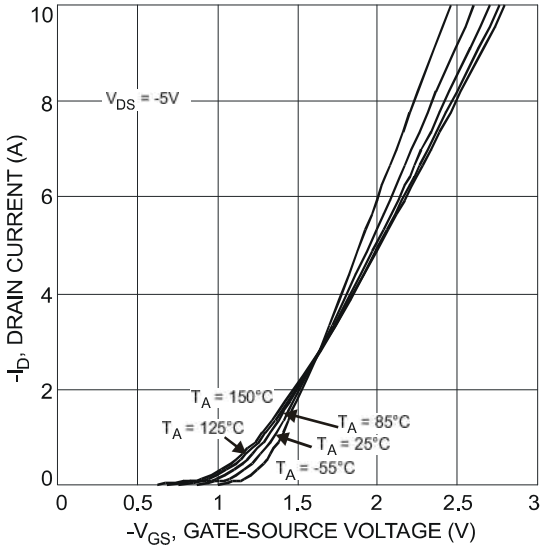


Fig. 2 Typical Transfer Characteristic

Typical Characteristics

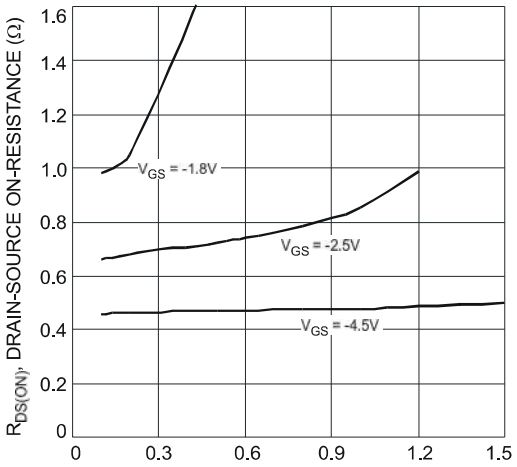


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

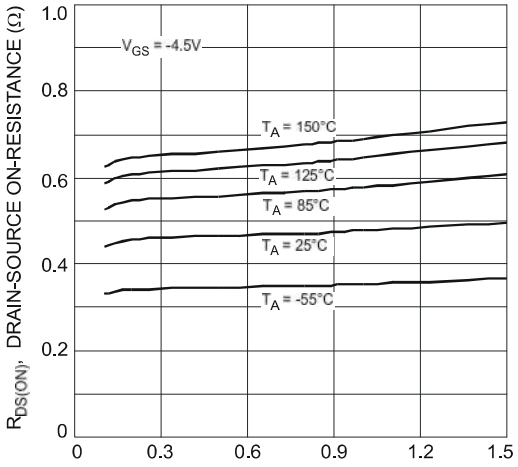


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

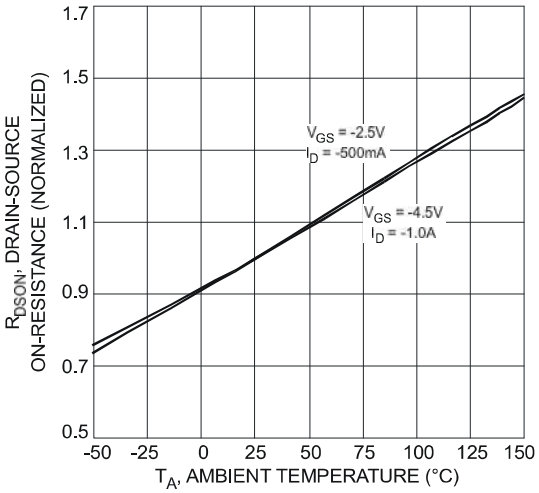


Fig. 5 On-Resistance Variation with Temperature

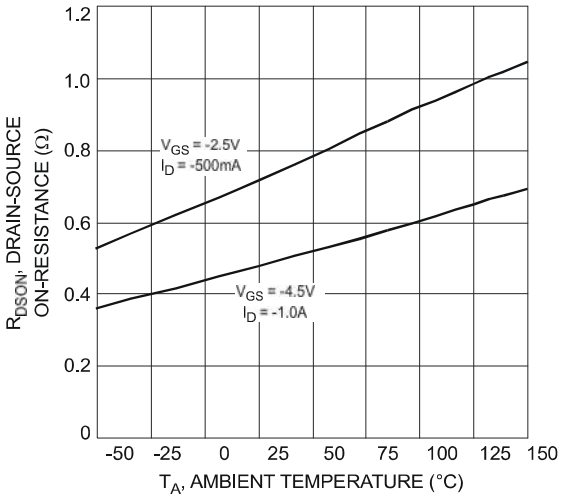


Fig. 6 On-Resistance Variation with Temperature

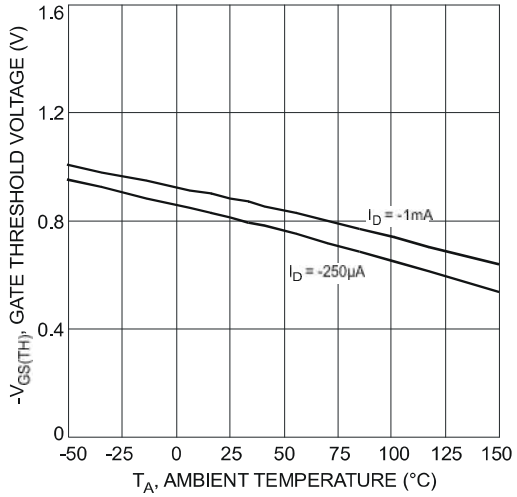


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

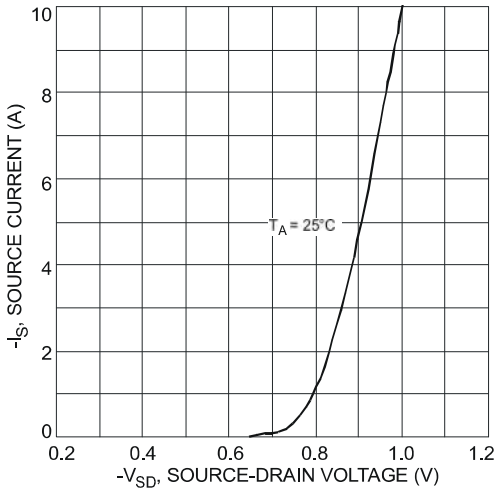


Fig. 8 Diode Forward Voltage vs. Current

Typical Characteristics

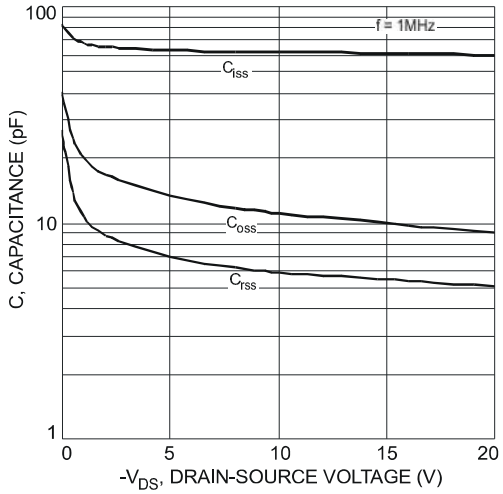


Fig. 9 Typical Total Capacitance

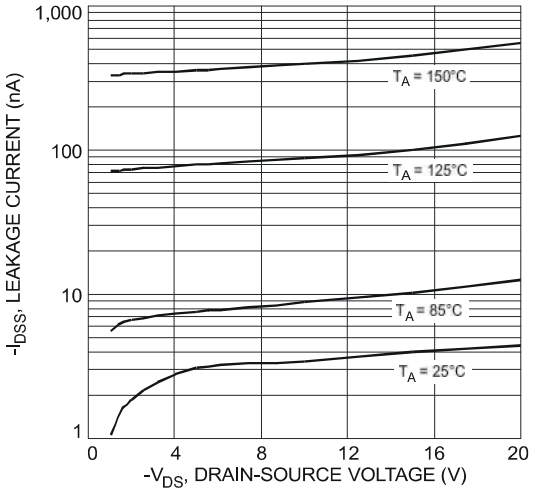


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

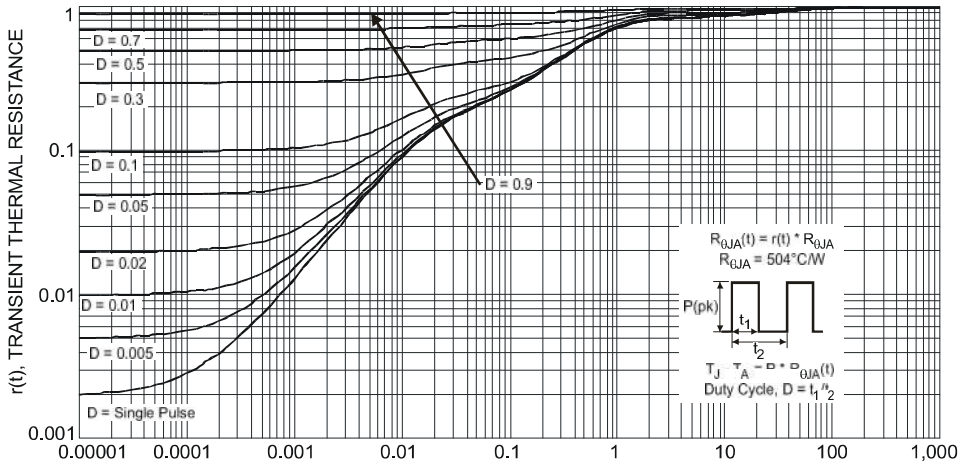


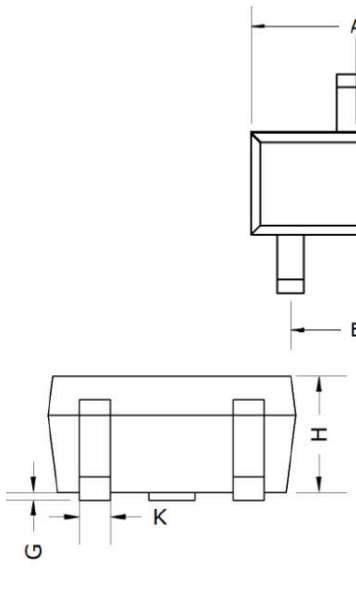
Fig. 11 Transient Thermal Response

Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-523	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

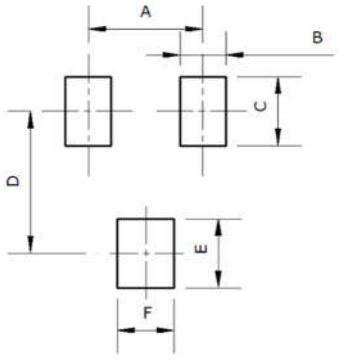
Package Dimensions

SOT-523



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	1.50	1.70	59	67
B	0.75	0.85	30	33
C	1.45	1.75	57	69
D	0.50TYP		0.020TYP	
E	0.90	1.10	35	43
G	0.00	0.10	0	4
H	0.60	0.80	24	31
J	0.10	0.20	4	8
K	0.15	0.35	6	14
L	0.26	0.46	10	18

The recommended mounting pad size



Millimeter (mm)	
Dim.	TYP
A	1.00
B	0.40
C	0.60
D	1.24
E	0.60
F	0.50

Disclaimer

The information presented in this document is for reference only. GuangDong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices),YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website https://www.yfwdiode.com, or consult YFW sales office for further assistance.