DMS05N60

N-Channel Depletion-Mode MOSFET

Features

- Depletion Mode (Normally On)
- Advanced Planar Technology
- Rugged Poly-silicon Gate Cell Structure
- Fast Switching Speed
- ESD Sensitive.
- RoHS compliant package

Applications

- Normally-on Switches
- SMPS start-up Circuit
- Linear Amplifier
- Converters
- Constant Current Source
- Telecom

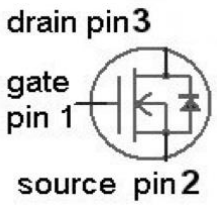
Package type：SOT-23

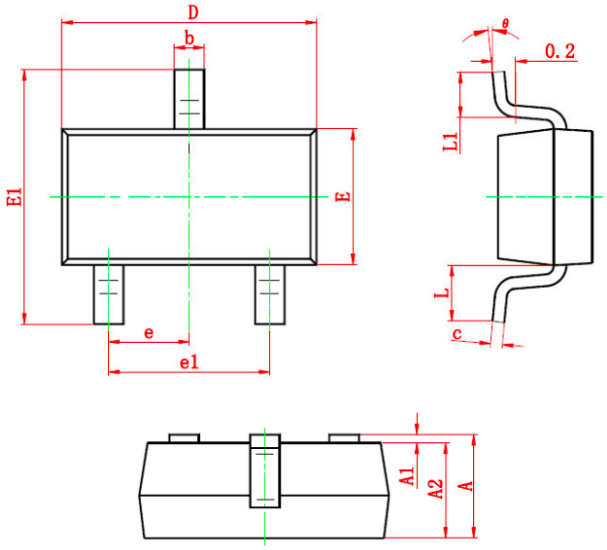
Packing & Order Information

3,000/Reel

RoHS
COMPLIANT

Graphic symbol





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°

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MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings TA=25˚C unless otherwise specified

Symbol	Parameter	DMS05N60	Unit
VDSX	Drain-to-Source Voltage [1]	600	V
VDGX	Drain-to-Gate Voltage [1]	600	V
ID	Continuous Drain Current	0.020	A
IDM	Pulsed Drain Current	0.081	A
PD	Power Dissipation	0.50	W
VGS	Gate-to-Source Voltage	±20	V
TL	Soldering Temperature Distance of 1.6mm from case for 10 seconds	300	˚C
TJ, TSTG	Operating and Storage Temperature Range	-55 to +150	

Caution: Stresses greater than those listed in the “Absolute Maximum Ratings “may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	DMS05N60	Unit
RθJA	Thermal Resistance, Junction to Ambient Air	250	K/W

OFF Characteristics TA=25˚C unless otherwise specified

Symbol	Parameter	Conditions	Min	Tpy	Max.	Units
BV_{DSX}	Drain-to-Source Breakdown Voltage	VGS=-5V,ID=250μA	600			V
$I_{D(OFF)}$	Drain-to-Source Teakage Current	VDS=600V,VGS=-5V			0.1	μA
		VDS=600V,VGS=-5V TJ=125˚C			10	μA
I_{GSS}	Gate-to-Source Leakage Current	VGS=+20V,VDS=0V			100	nA
		VGS=-20V,VDS=0V			-100	nA

ON Characteristics TA=25˚C unless otherwise specified

Symbol	Parameter	Conditions	Min	Tpy	Max.	Units
I_{DSS}	Saturated Drain-to-Source Current	VGS=0V,VDS=25V	12			mA
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	VGS=0V,ID=3Ma[4]		500	700	Ω
$V_{GS(OFF)}$	Gate-to-Source Cut-off Voltage	VDS=3V,ID=8μA	-2.7		-1.5	V
gfs	Forward Transconductance	VDS=10V,ID=5mA		15.4		mS

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N-Channel Depletion-Mode MOSFET

Dynamic Characteristics Essentially independent of operating temperature						
Symbol	Parameter	Conditions	Min	Tpy	Max.	Units
C_{ISS}	Input Capacitance	VGS=-5V		12.3		pf
C_{OSS}	Oput Capacitance	VDS=25V		2.6		
C_{RSS}	Reverse Transfer Capacitance	f=1.0MHz		1.8		
Q_g	Total Gate Charge	VGS=-5V~5V		1.55		nC
Qgs	Gate-to-Source Charge	VDS=300V,ID=5mA		0.12		
Q_{gd}	Gate-to-Drain (Miller) Charge			0.56		

Resistive Switching Characteristics Essentially independent of operating temperature						
Symbol	Parameter	Conditions	Min	Tpy	Max.	Units
Td(ON)	Turn-on Delay Time	VGS=-5V~5V		4		ns
Trise	Rise Time	VDD=300V,ID=5Ma		9		
td(OFF)	Turn-off Delay Time	RG=20Ohm		14		
tfall	Fall Time			84		

Resistive Switching Characteristics Essentially independent of operating temperature						
Symbol	Parameter	Conditions	Min	Tpy	Max.	Units
VSD	Diode Forward Voltage	ISD=3.0mA,VGS=-10V			1.2	V

NOTE:

[1] TJ=+25°C to +150°C

[2] Repetitive rating, pulse width limited by maximum junction temperature.

[3] Pulse width ≦ 380 μs ; duty cycle ≦ 2%

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■Characteristic Curves

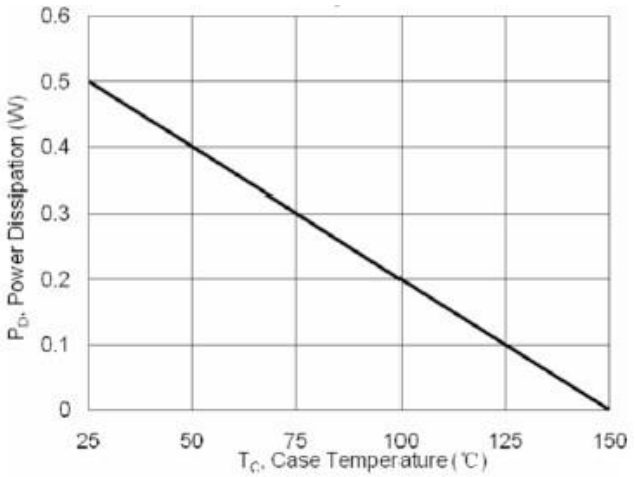

FIG.1 – MAXIMUM POWER DISSIPATION VS CASE TEMPERATURE

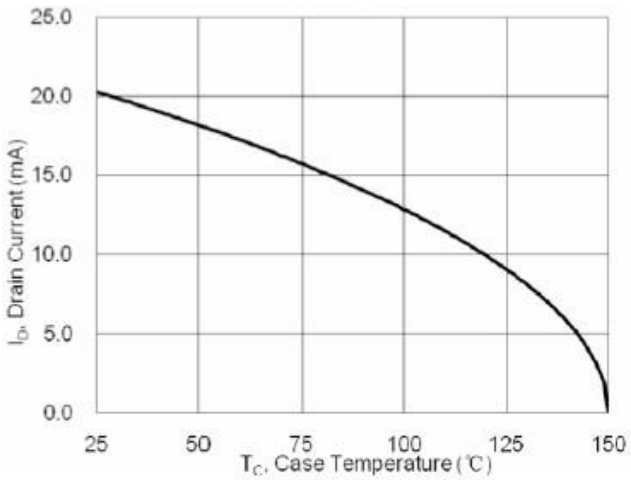

FIG.2 – MAXIMUM CONTINUOUS DRAIN CURRENT VS CASE TEMPERATURE

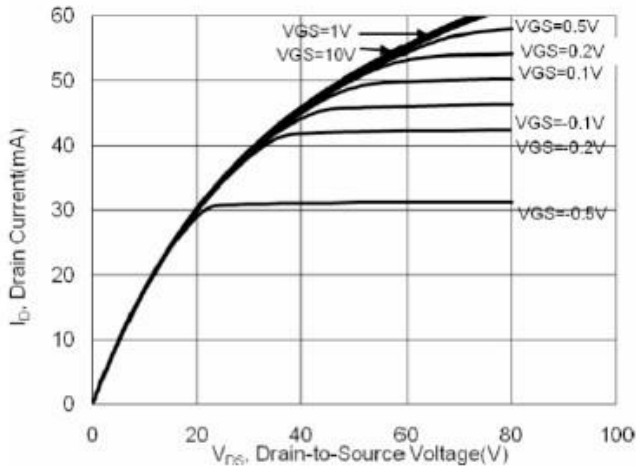

FIG.3 –TYPICAL OUTPUT CHARACTERISTICS

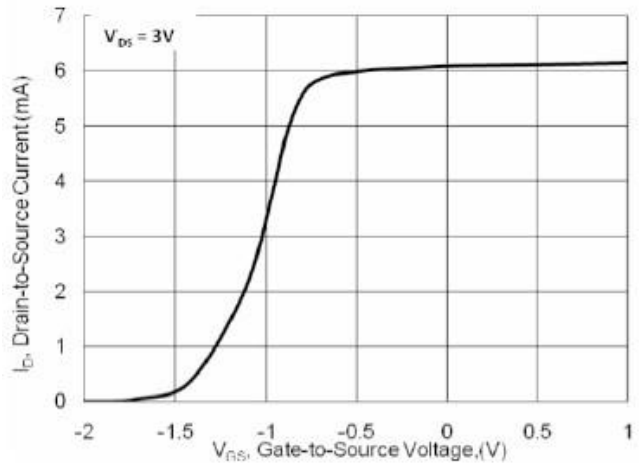

FIG.4 – TYPICAL TRANSFER CHARACTERISTICS

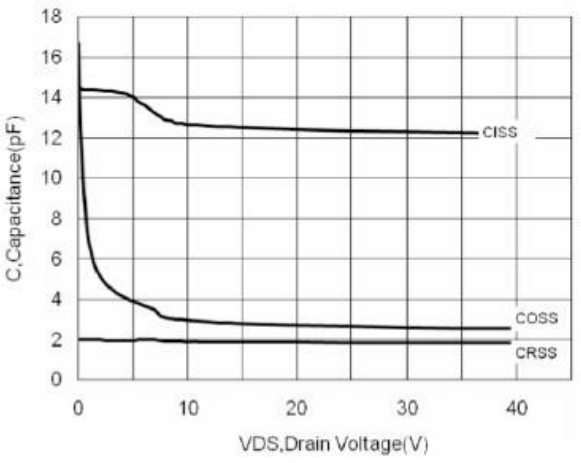

FIG.5 –TYPICAL CAPACITANCE VS. DRAIN-TO-SOURCE VOLTAGE

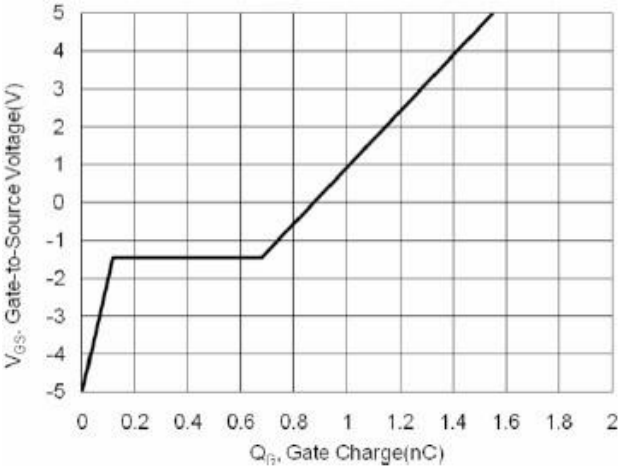

FIG.6 –TYPICAL GATE CHARGE VS GATE-TO-SOURCE VOLTAGE

DMS05N60

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