

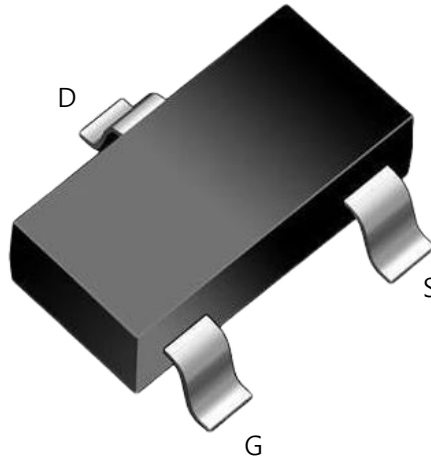
PM018N020SG

20V 5A 18mΩ Si Single N-ch Enhancement Mode Power MOSFET with Normal Diode

Features

Si Single N-ch Enhancement Mode Power MOSFET

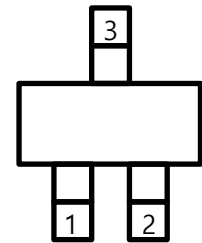
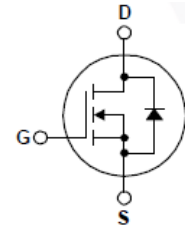
- Rated to 20V at 5Amps @ $T_j = 25^\circ\text{C}$
- Max $R_{DS(on)} = 18\text{ m}\Omega$
- Typ $R_{DS(on)} = 11\text{ m}\Omega$
- Gate Charge(Typ. $Q_g=11\text{ nC}$)
- 100% Avalanche Tested



PKG type : SOT-23

Application

- DC-DC Converters
- Power switch



Pin assignment

Description

The PM018N020SG uses advanced trench technology MOSFETs to provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	V
I_D	Drain Current	$T_c=25^\circ\text{C}$	5	A
I_{DM}	Pulsed Drain Current	Pulse width limited by junction temperature	20	A
V_{GS}	Gate-Source Voltage		± 12	V
P_d	Power Dissipation	$T_c=25^\circ\text{C}$	1.25	W
T_j	Operating Junction Temperature		150	$^\circ\text{C}$
T_{stg}	Storage Temperature		-55 to 150	$^\circ\text{C}$

Package Marking and Ordering Information

Device Marking	Device	Package	Packing Method	Tape width	Quantity
PM018N020SG	PM018N020	SOT-23	REEL	-	3000

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A, T_J = 25^\circ C$	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 20V, V_{GS} = 0V$	-	-	100	nA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 12V, V_{DS} = 0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.4	0.8	1.0	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	$V_{GS} = 10V, I_D = 4.2A$	-	11	18	m Ω
g_{FS}	Forward Transconductance	$V_{DS} = 10V, I_D = 5A$	25	-	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = 10V, I_D = 1A, R_G = 6\Omega$	-	9	-	ns
T_r	Turn-on Rise time		-	30	-	
$t_{d(off)}$	Turn-off Delay time		-	35	-	
T_f	Turn-off Fall time		-	10	-	



Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JA}$	Thermal resistance, Junction to Ambient		100	-	$^{\circ}\text{C}/\text{W}$
C_{iss}	Input capacitance	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	780	-	pF
C_{oss}	Output capacitance		140	-	
C_{rss}	Reverse transfer capacitance		80	-	
$Q_{g(tot)}$	Total gate charge at 10V	$V_{DD} = 10\text{V}, I_D = 5\text{A}$ $V_{GS(on)} = 4.5\text{V}$	11	-	nC
Q_{gs}	Gate to source gate charge		2.3	-	
Q_{gd}	Gate to drain "Miller" charge		2.9	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current		-	5	A
V_{SD}	Drain to source diode forward voltage	$I_{SD} = 1\text{A}, V_{GS} = 0\text{V}$	-	1.2	V

Typical Characteristics

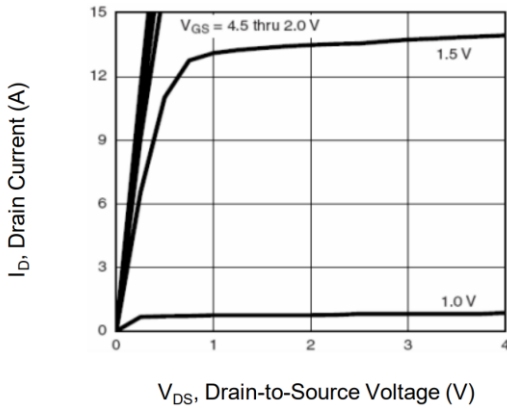


Figure 1. Output Characteristics

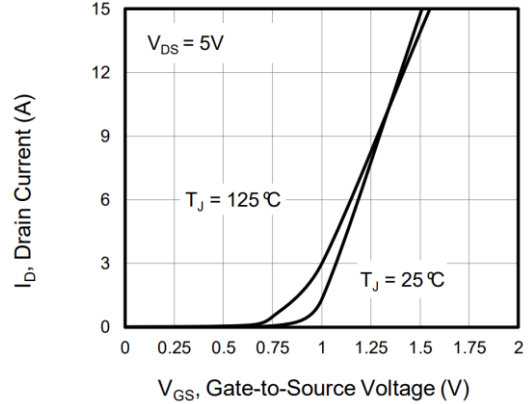


Figure 2. Transfer Characteristics

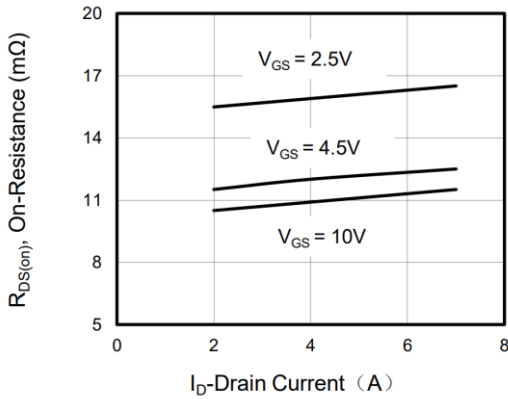


Figure 3. Drain to Source On-Resistance

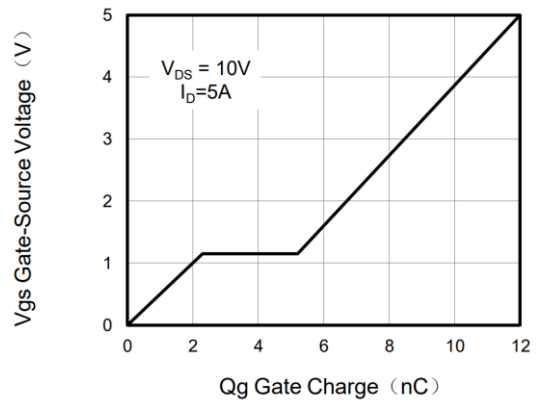


Figure 4. Gate Charge

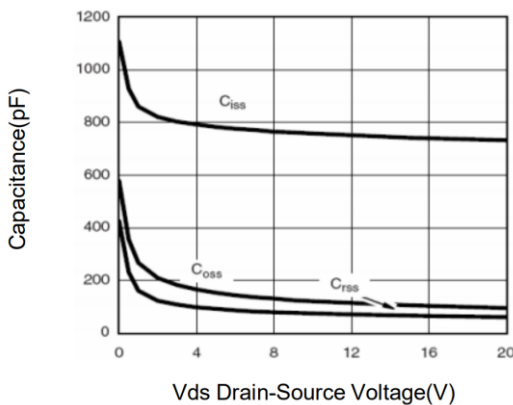


Figure 5. Capacitance Characteristics

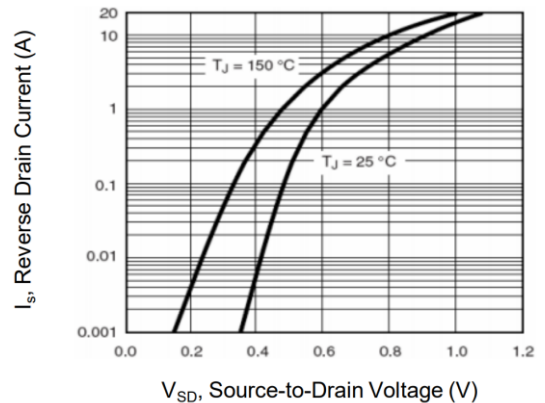


Figure 6. Source to Drain Diode Forward

Typical Characteristics

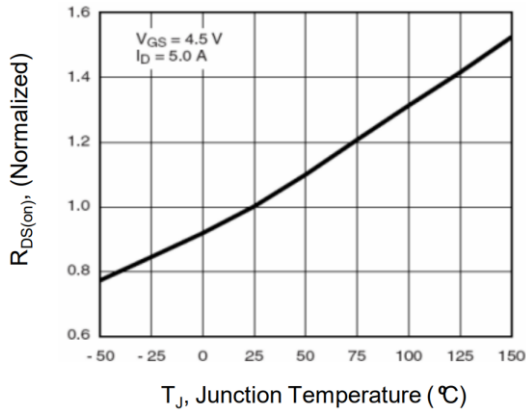


Figure 7. Drain to Source On-Resistance

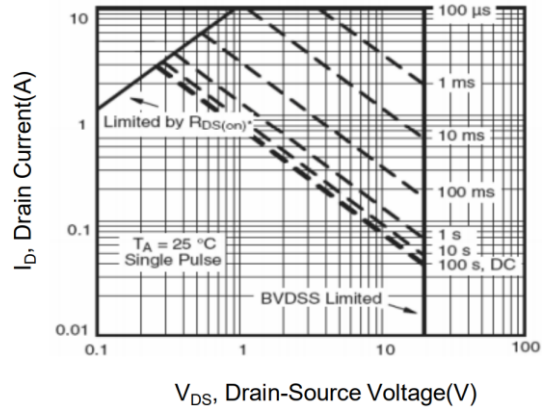


Figure 8. Safe Operation Area

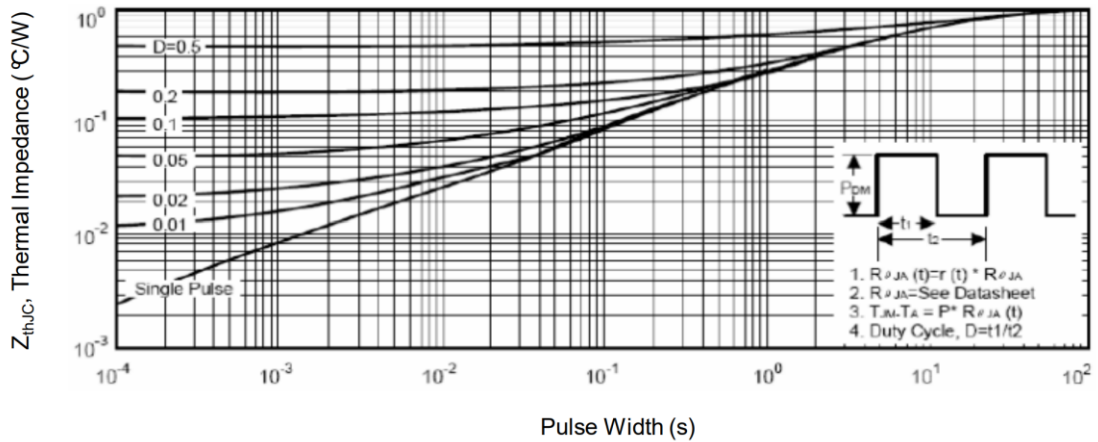
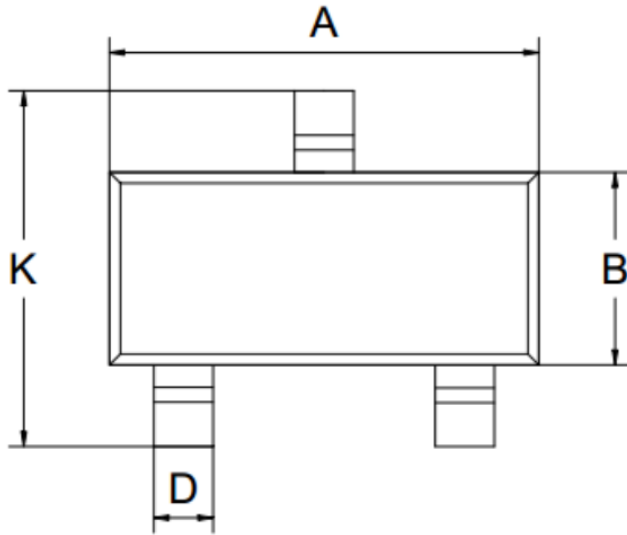


Figure 9. Normalized Maximum Transient Thermal Impedance

Package Outline

Unit : mm



SYMBOL	DIMENSIONS		
	MIN	NOM	MAX
A	2.80	2.90	3.00
B	1.50	1.60	1.70
C	1.00	1.10	1.20
D	0.30	0.40	0.50
E	0.25	0.40	0.55
G	1.90		
H	0.00	-	0.10
J	0.047	0.127	0.207
K	2.60	2.80	3.00

