

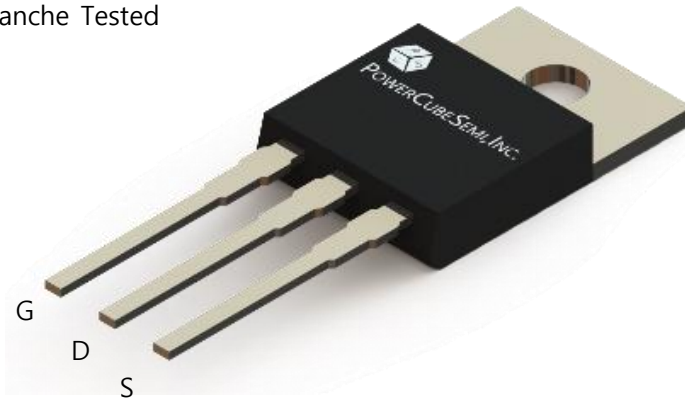
PM007P040AG

-40V -80A 7mΩ Si Single P-ch Enhancement Mode MOSFET with Normal Diode

Features

Si P-Ch Enhancement Power MOSFET

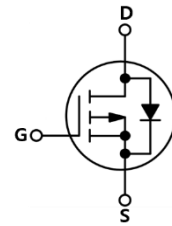
- Rated to -40V at -80Amps @ $T_j = 25^\circ\text{C}$
- Max $R_{DS(on)} = 7\text{ m}\Omega$
- Typ $R_{DS(on)} = 5.2\text{ m}\Omega$
- Gate Charge(Typ. $Q_g=106\text{ nC}$)
- 100% Avalanche Tested



PKG type : TO-220

Application

- Power switch
- DC/DC converters



Description

The PM007P040AG uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
BV_{DSS}	Drain-source breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-40	V
I_D	Drain current	$T_c=25^\circ\text{C}$	-80	A
I_{DM}	Drain current	Pulse width limited by junction temperature	-320	A
V_{GS}	Gate-source voltage		± 20	V
E_{AS}	Single pulsed avalanche energy	$V_{GS}=-10V, R_G=25\Omega$ $V_{DD}=-40V, L=0.5mH$	306	mJ
P_d	Power dissipation	$T_c=25^\circ\text{C}$	115	W
T_j	Operating junction		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
PM007P040AG	PM007P040	TO-220	TUBE	-	50

Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-source breakdown voltage	$V_{GS} = 0V, I_D = -250\mu A, T_J = 25^\circ C$	-40	-	-	V
I_{DSS}	Zero gate voltage drain current	$V_{DS} = -40V, V_{GS} = 0V$	-	-	-1	μA
I_{GSS}	Gate-source leakage current	$V_{GS} = \pm 20V$	-	-	± 100	nA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.7	-2.5	V
$R_{DS(on)}$	Static drain-source on state resistance	$V_{GS} = -10V, I_D = -20A$	-	5.2	7.0	m Ω
		$V_{GS} = -4.5V, I_D = -20A$	-	6.8	9.0	
g_{FS}	Forward transconductance	$V_{DS} = -5V, I_D = -20A$	-	42	-	S
$t_{d(on)}$	Turn-on Delay time	$V_{DD} = -20V, I_D = -20A, R_G = 1\Omega$	-	15	-	ns
t_r	Turn-on Rise time		-	12	-	
$t_{d(off)}$	Turn-off Delay time		-	70	-	
t_f	Turn-off Fall time		-	18	-	



Electrical Characteristics of Si MOSFET

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
$R_{\theta JC}$	Thermal resistance, Junction to case		1.08	-	$^{\circ}\text{C}/\text{W}$
C_{iss}	Input capacitance	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V},$ $f = 1.0\text{MHz}$	6985	-	pF
C_{oss}	Output capacitance		761	-	
C_{rss}	Reverse transfer capacitance		698	-	
$Q_{g(\text{tot})}$	Total gate charge at 10V	$V_{DD} = -20\text{V}, I_D = -20\text{A}$ $V_{GS} = -10\text{V}$	106	-	nC
Q_{gs}	Gate to source gate charge		22	-	
Q_{gd}	Gate to drain "Miller" charge		27	-	

Electrical Characteristics of Si Diode

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_S	Maximum continuous drain to source diode forward current	$T_c = 25^{\circ}\text{C}$	-	-80	A
V_{SD}	Drain to source diode forward voltage	$I_{SD} = -20\text{A}, V_{GS} = 0\text{V}$	-	-1.2	V
T_{rr}	Reverse recovery time	$I_F = -20\text{A}, V_{GS} = 0\text{V},$ $di_F/dt = -100\text{A}/\mu\text{s}$	53	-	ns
Q_{rr}	Reverse recovery charge		50	-	nC

Typical Characteristics

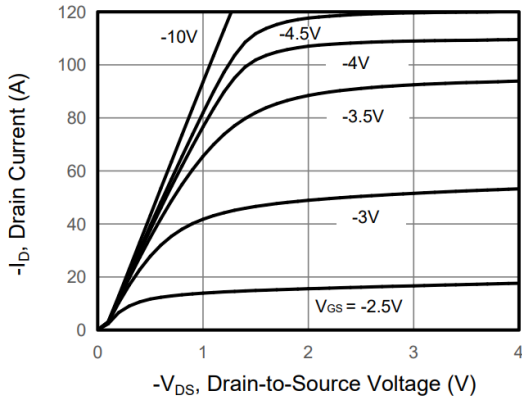


Figure 1. Output Characteristics

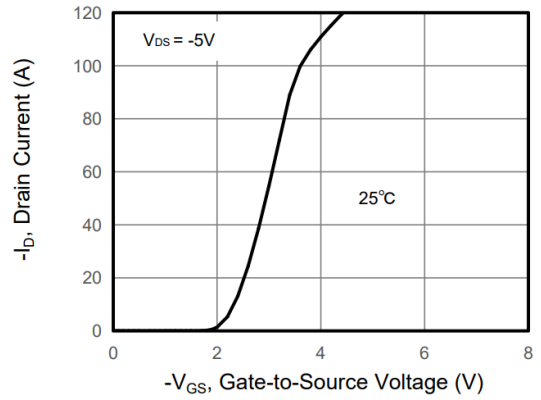


Figure 2. Transfer Characteristics

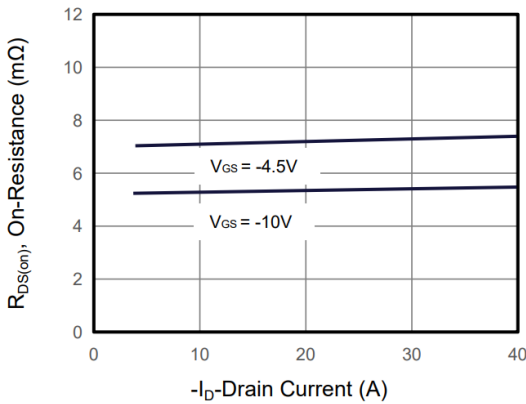


Figure 3. Drain Source On Resistance

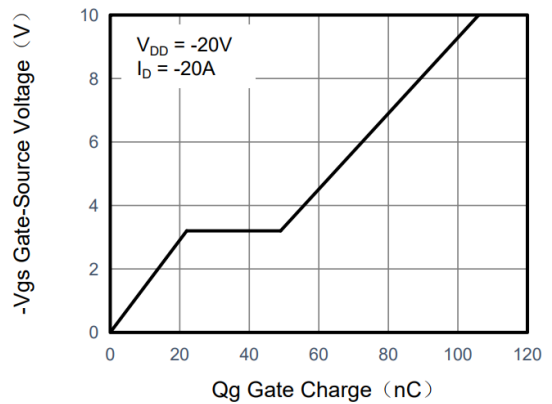


Figure 4. Gate Charge

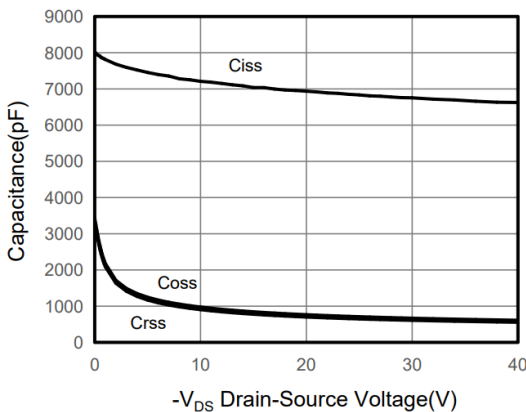


Figure 5. Capacitance

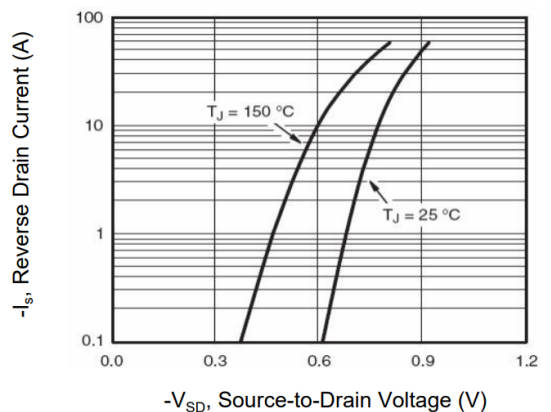


Figure 6. Source-Drain Diode Forward

Typical Characteristics

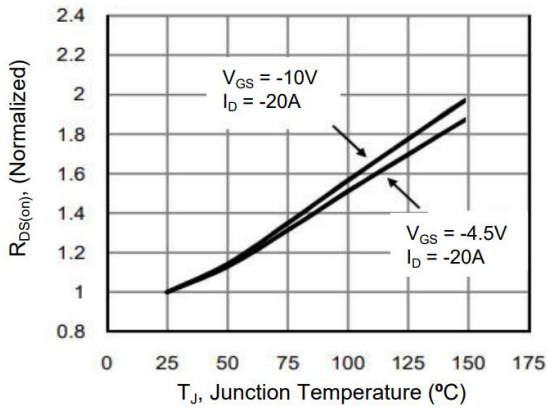


Figure 7. Drain-Source On-Resistance

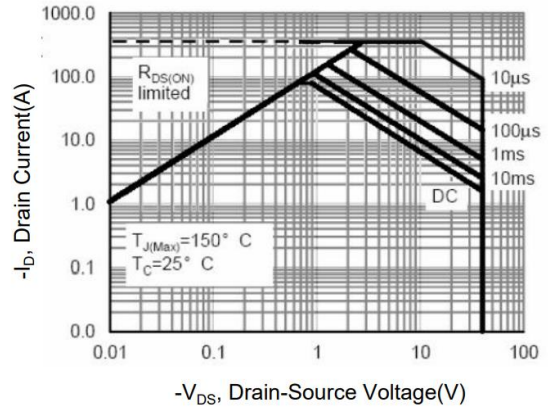


Figure 8. Safe Operation Area

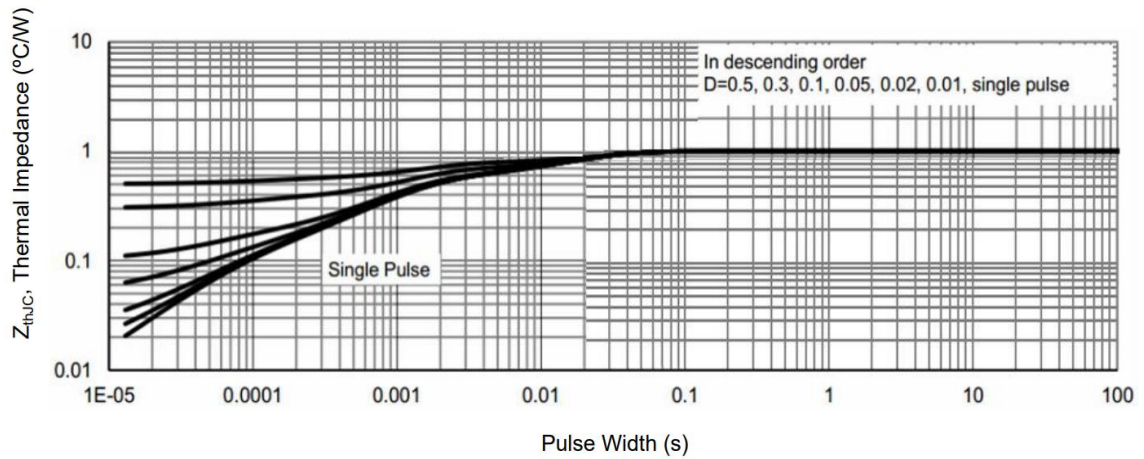


Figure 9. Normalized Maximum Transient Thermal Impedance



Package Outline

Unit : mm

