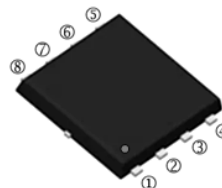


RoHS Compliant Product  
A suffix of "-C" specifies halogen free

## DESCRIPTION

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

PR-8PP



## FEATURES

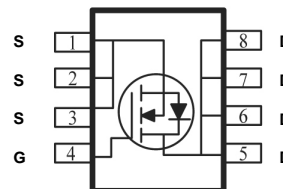
- Fast Switching
- Improved dv/dt Capability
- Green Device Available

## PACKAGE INFORMATION

Package	MPQ	Leader Size
PR-8PP	3K	13 inch

## ORDER INFORMATION

Part Number	Type
SPR50N04-C	Lead (Pb)-free and Halogen-free



## ABSOLUTE MAXIMUM RATINGS ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	50
		$T_C=100^\circ\text{C}$	32
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	69	A
Power Dissipation	$P_D$	55.5	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Maximum Thermal Resistance Junction-Ambient	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Maximum Thermal Resistance Junction-Case	$R_{\theta JC}$	2.25	

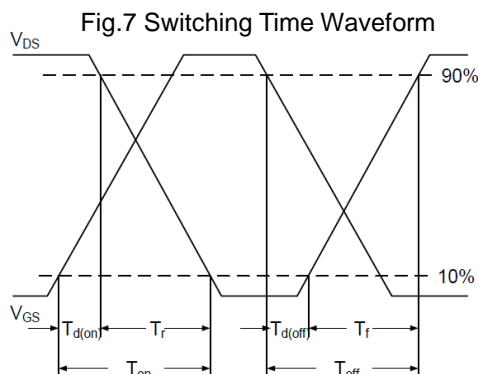
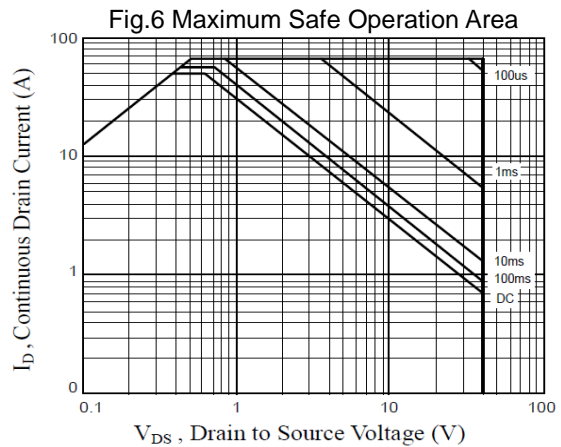
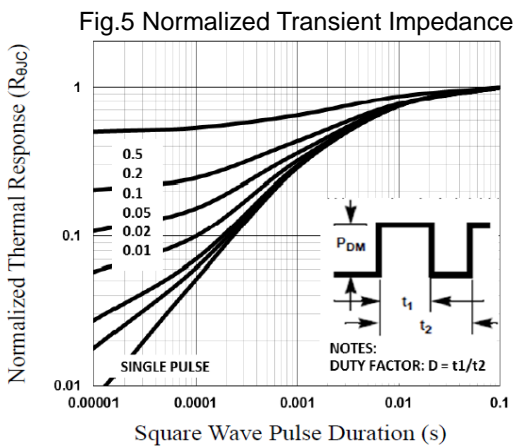
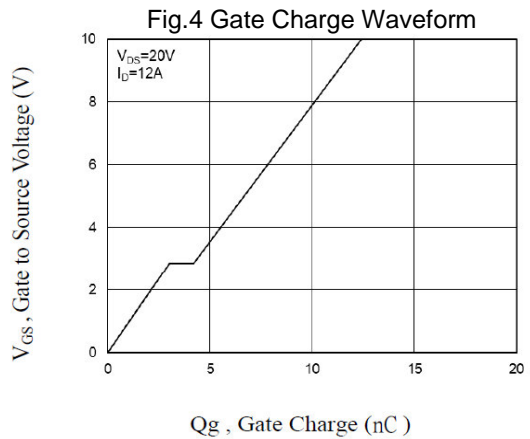
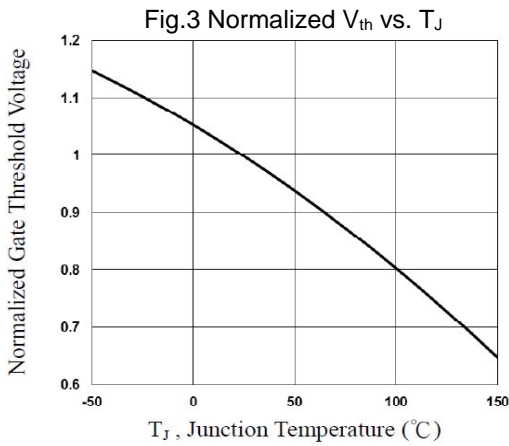
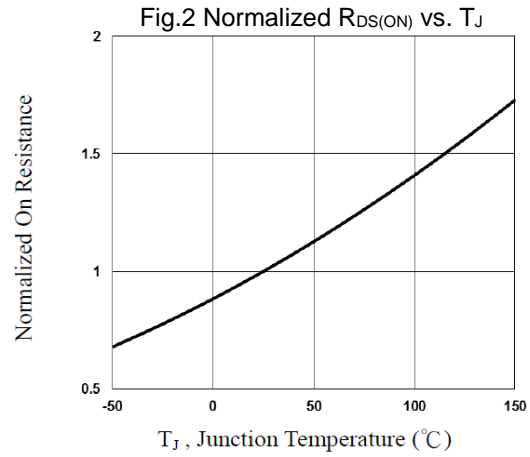
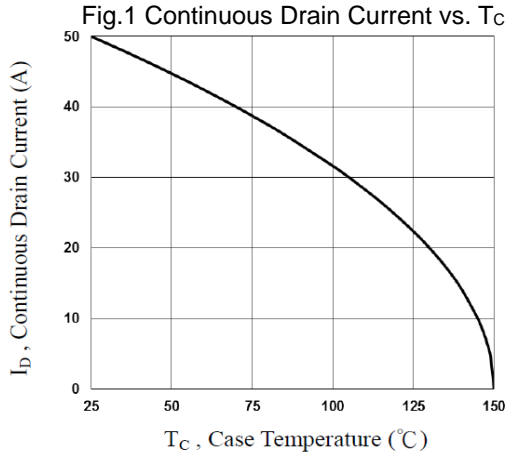
**ELECTRICAL CHARACTERISTICS** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	40	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	1.2	1.6	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS}=\pm 20\text{V}, V_{DS}=0$
Drain-Source Leakage Current	$I_{DSS}$	-	-	1	$\mu\text{A}$	$V_{DS}=32\text{V}, V_{GS}=0, T_J=25^\circ\text{C}$
Static Drain-Source On-Resistance <sup>2</sup>	$R_{DS(ON)}$	-	-	6.5	m $\Omega$	$V_{GS}=10\text{V}, I_D=10\text{A}$
		-	-	11		$V_{GS}=4.5\text{V}, I_D=5\text{A}$
Gate Resistance	$R_g$	-	1.7	-	$\Omega$	$V_{GS}=V_{DS}=0\text{V}, f=1\text{MHz}$
Forward Transconductance	$g_{fs}$	-	8	-	S	$V_{DS}=10\text{V}, I_D=5\text{A}$
Total Gate Charge	$Q_g$	-	5.8	-	nC	$V_{DS}=20\text{V}$ $V_{GS}=4.5\text{V}$ $I_D=12\text{A}$
Gate-Source Charge	$Q_{gs}$	-	3	-		
Gate-Drain Change	$Q_{gd}$	-	1.2	-		
Turn-on Delay Time	$T_{d(on)}$	-	14.3	-	nS	$V_{DD}=15\text{V}$ $V_{GS}=10\text{V}$ $I_D=1\text{A}$ $R_G=3.3\Omega$
Rise Time	$T_r$	-	5.6	-		
Turn-off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	$T_f$	-	11	-		
Input Capacitance	$C_{iss}$	-	690	-	pF	$V_{DS}=15\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	193	-		
Reverse Transfer Capacitance	$C_{rss}$	-	38	-		
<b>Source-Drain Diode</b>						
Continuous Source Current	$I_S$	-	-	50	A	$V_G=V_D=0\text{V}$ , Force Current
Diode Forward Voltage	$V_{SD}$	-	-	1	V	$V_{GS}=0, I_S=1\text{A}, T_J=25^\circ\text{C}$

Notes:

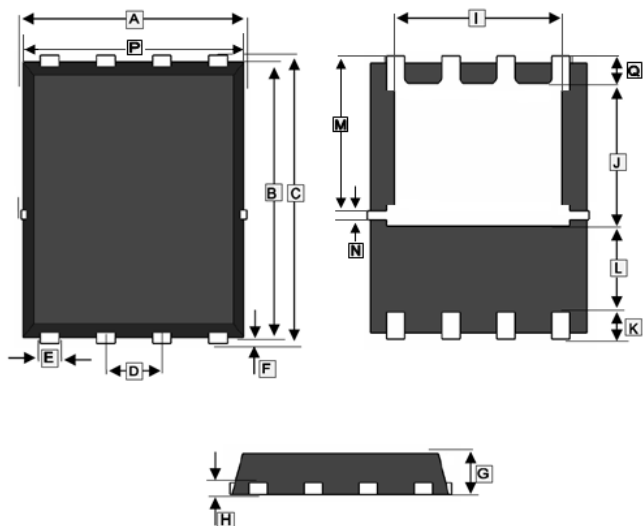
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

**CHARACTERISTICS CURVES**



**PACKAGE OUTLINE DIMENSIONS**

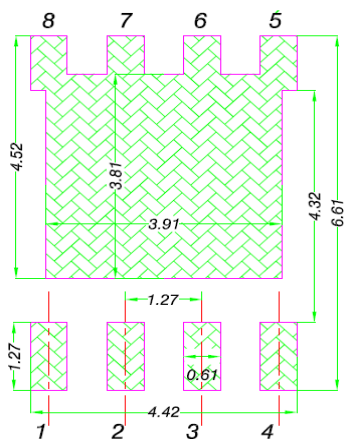
**PR-8PP**



REF.	Millimeter	
	Min.	Max.
A	4.80	5.40
B	5.45	6.06
C	5.80	6.35
D	1.27 BSC.	
E	0.30	0.51
F	0.05	0.36
G	0.80	1.30
H	0.254 REF.	
I	3.80 REF.	
J	3.60 REF.	
K	0.60 REF.	
L	1.10 REF.	
M	3.75 REF.	
N	0.25 REF.	
P	4.80	5.00
Q	0.50 REF.	

**MOUNTING PAD LAYOUT**

**PR-8PP**



\*Dimensions in millimeters