

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

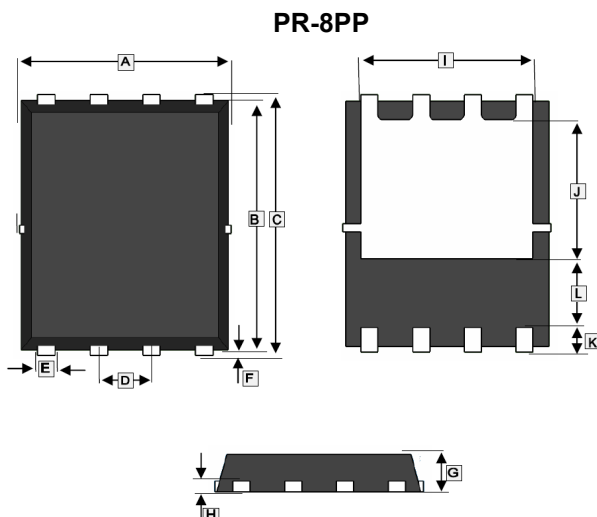
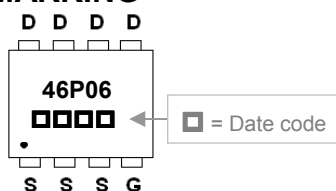
DESCRIPTION

The SPR46P06-C provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The PR-8PP package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

FEATURES

- Lower Gate Charge
- Advanced high cell density Trench technology
- Green Device Available

MARKING



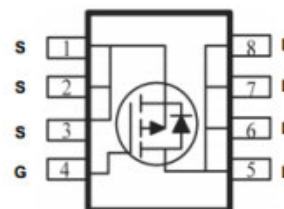
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.9	5.1	G	0.8	1.0
B	5.7	5.9	H	0.254 Ref.	
C	5.95	6.2	I	4.0 Ref.	
D	1.27 BSC.		J	3.4 Ref.	
E	0.35	0.49	K	0.6 Ref.	
F	0.1	0.2	L	1.4 Ref.	

PACKAGE INFORMATION

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

ORDER INFORMATION

Part Number	Type
SPR46P06-C	Lead (Pb)-free and Halogen-free



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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	-46
		$T_C=100^\circ\text{C}$	-34
Pulsed Drain Current ²	I_{DM}	-90	A
Power Dissipation	P_D	89	W
Operating Junction & Storage Temperature	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	1.4	

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-60	-	-	V	$V_{GS}=0, I_D = -250\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu A$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V$
Drain-Source Leakage Current	I_{DSS}	-	-	-1	uA	$V_{DS} = -48V, V_{GS}=0, T_J=25^\circ C$
		-	-	-5		$V_{DS} = -48V, V_{GS}=0, T_J=55^\circ C$
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	-	25	m Ω	$V_{GS} = -10V, I_D = -18A$
		-	-	35		$V_{GS} = -4.5V, I_D = -12A$
Total Gate Charge	Q_g	-	25	-	nC	$I_D = -12A$ $V_{DS} = -20V$ $V_{GS} = -4.5V$
Gate-Source Charge	Q_{gs}	-	6.7	-		
Gate-Drain Charge	Q_{gd}	-	5.5	-		
Turn-on Delay Time	$T_{d(on)}$	-	38	-	nS	$V_{DD} = -15V$ $I_D = -1A$ $V_{GS} = -10V$ $R_G = 3.3\Omega$
Rise Time	T_r	-	23.6	-		
Turn-off Delay Time	$T_{d(off)}$	-	100	-		
Fall Time	T_f	-	6.8	-		
Input Capacitance	C_{iss}	-	3635	-	pF	$V_{GS} = 0$ $V_{DS} = -15V$ $f = 1.0MHz$
Output Capacitance	C_{oss}	-	224	-		
Reverse Transfer Capacitance	C_{rss}	-	141	-		
Source-Drain Diode						
Diode Forward Voltage ³	V_{SD}	-	-	-1.2	V	$I_S = -1A, V_{GS}=0$
Continuous Source Current ¹	I_S	-	-	-46	A	$V_G = V_D = 0, \text{Force Current}$
Reverse Recovery Time	T_{rr}	-	18	-	nS	$I_F = -12A, di/dt = 100A/\mu s$
Reverse Recovery Charge	Q_{rr}	-	14.3	-	nC	$T_J = 25^\circ C$

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The Pulse width limited by maximum junction temperature, Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
3. The Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

CHARACTERISTIC CURVES

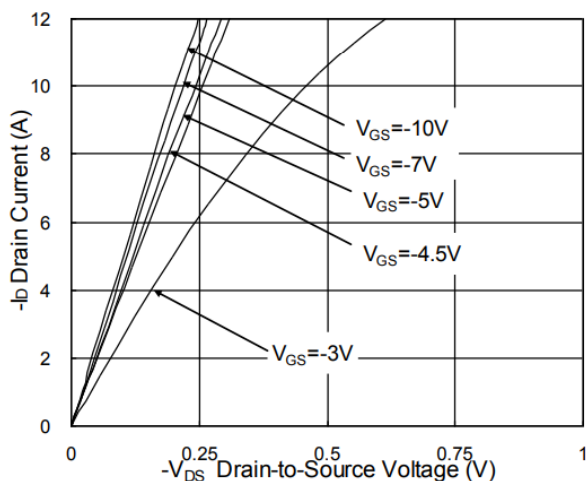


Fig.1 Typical Output Characteristics

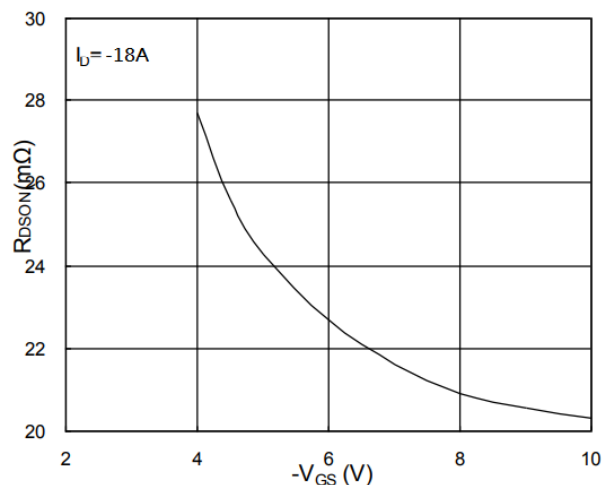


Fig.2 On-Resistance v.s Gate-Source

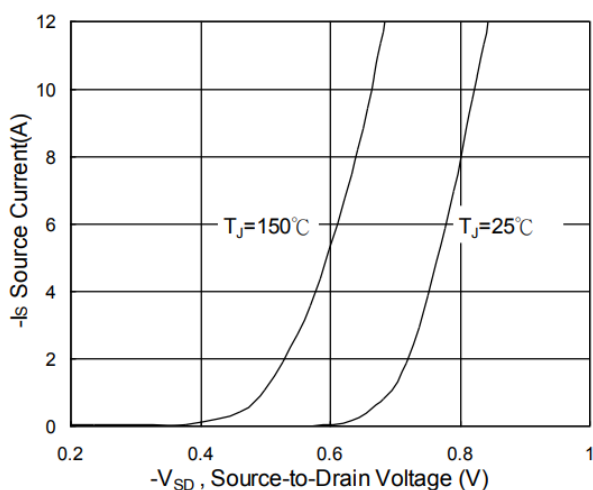


Fig.3 Forward Characteristics Of Reverse

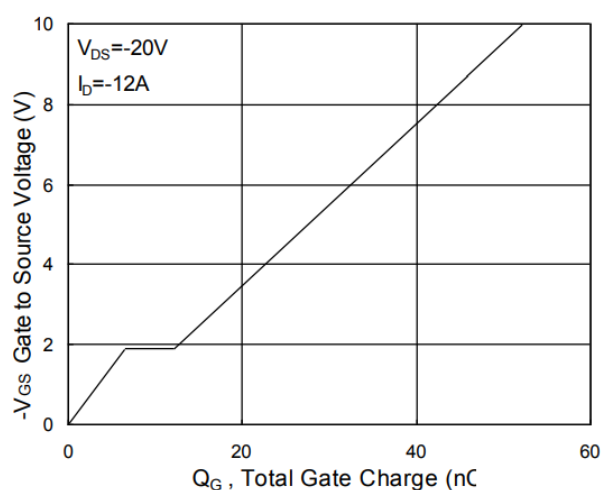


Fig.4 Gate-Charge Characteristics

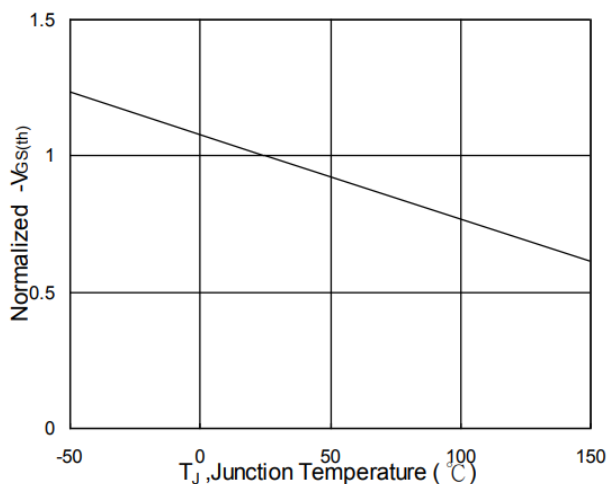


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

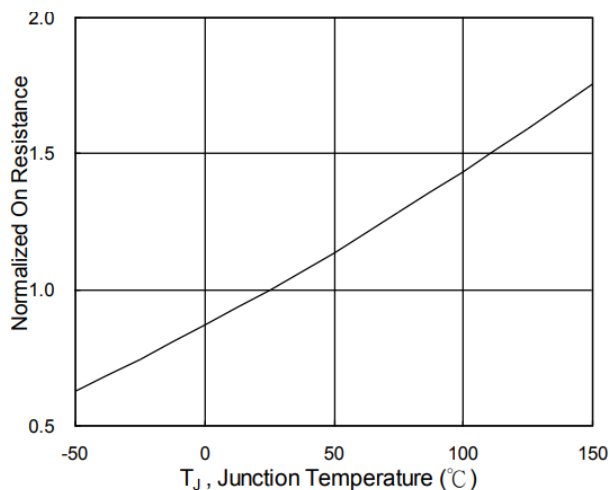


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

CHARACTERISTIC CURVES

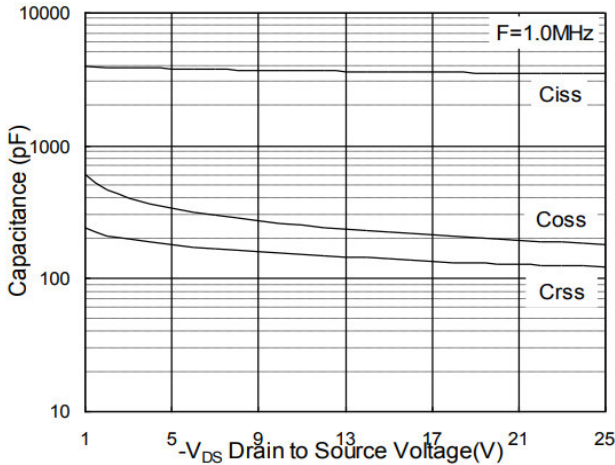


Fig.7 Capacitance

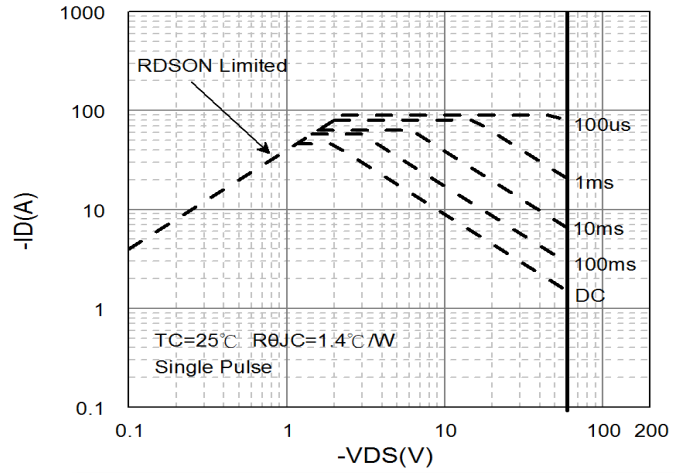


Fig.8 Safe Operating Area

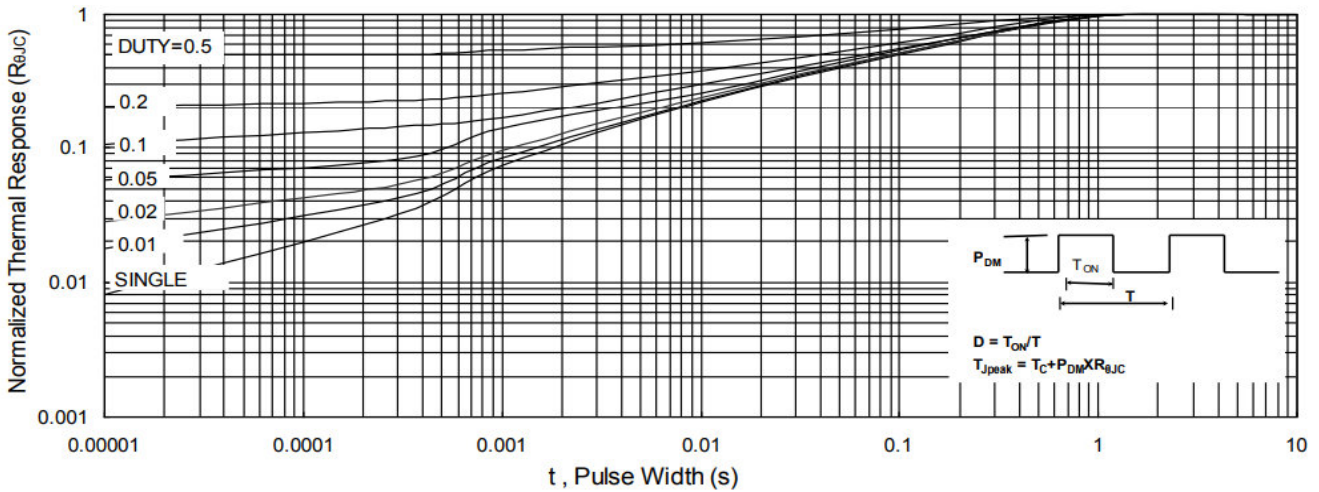


Fig.9 Normalized Maximum Transient Thermal Impedance

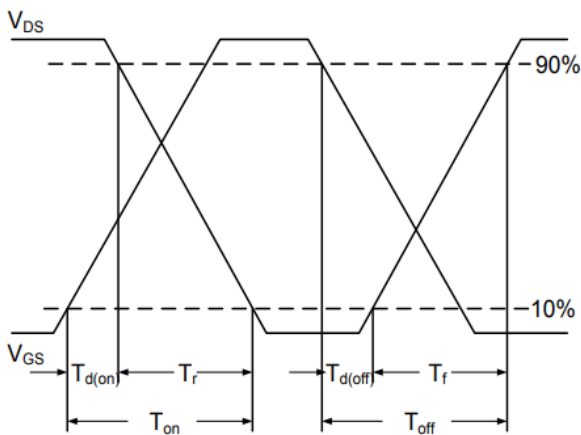


Fig.10 Switching Time Waveform

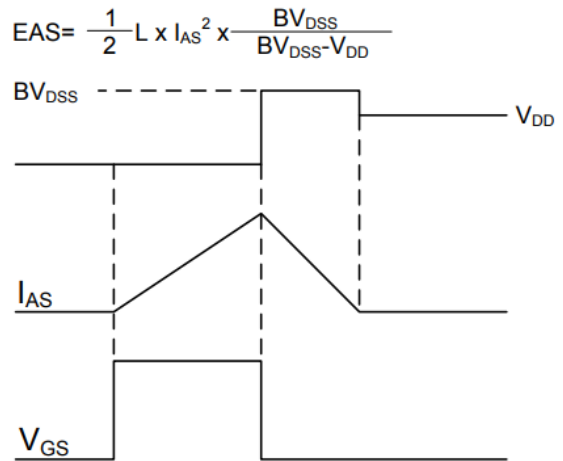


Fig.11 Unclamped Inductive Switching Waveform