Elektronische Bauelemente

SPR50P10-C

-50A, -100V, $R_{DS(ON)}$ 30mΩ

P-Channel Enhancement Mode Power MOSFET

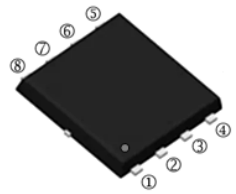
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SPR50P10-C is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SPR50P10-C meet the RoHS and Green Product requirement with full function reliability approved.

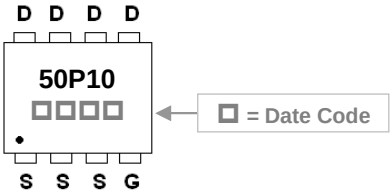
PR-8PP

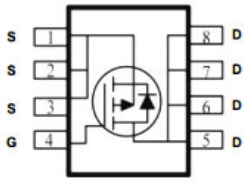


FEATURES

- Super Low Gate Charge
- Advanced High Cell Density Trench Technology
- Green Device Available
- Fast Switching Characteristic

MARKING





PACKAGE INFORMATION

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

ORDER INFORMATION

Part Number	Type
SPR50P10-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25℃	I_D	-50	A
	T_C=100℃		-32	
	T_A=25℃		-7.9	
	T_A=70℃		-6.3	
Pulsed Drain Current [2]	T_C=25℃	I_{DM}	-180	A
Total Power Dissipation	T_C=25℃	P_D	78	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	32	℃/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	1.6	

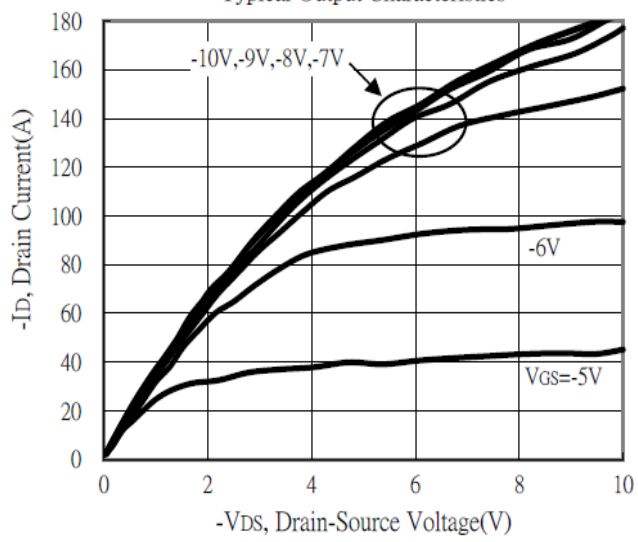
ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-100	-	-	V	V_{GS}=0, I_D= -250uA
Gate-Threshold Voltage	$V_{GS(th)}$	-2	-	-4	V	V_{DS}=V_{GS}, I_D= -250uA
Forward Transconductance	g_{fs}	-	19	-	S	V_{DS}= -10V, I_D= -7A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	-1	uA	V_{DS}= -80V, V_{GS}=0
Static Drain-Source On-Resistance [3]	$R_{DS(ON)}$	-	22	30	mΩ	V_{GS}= -10V, I_D= -7A
Total Gate Charge	Q_g	-	78	-	nC	I_D= -7A V_{DS}= -50V V_{GS}= -10V
Gate-Source Charge	Q_{gs}	-	21	-		
Gate-Drain Change	Q_{gd}	-	21	-		
Turn-on Delay Time	$T_{d(on)}$	-	28	-	nS	V_{DS}= -50V I_D= -1A V_{GS}= -10V R_G=6Ω
Rise Time	T_r	-	27	-		
Turn-off Delay Time	$T_{d(off)}$	-	154	-		
Fall Time	T_f	-	50	-		
Input Capacitance	C_{iss}	-	4660	-	pF	V_{GS}=0 V_{DS}= -50V f=1MHz
Output Capacitance	C_{oss}	-	260	-		
Reverse Transfer Capacitance	C_{rss}	-	160	-		
Source-Drain Diode						
Diode Forward Voltage [3]	V_{SD}	-	-0.75	-1.2	V	I_S= -7A, V_{GS}=0
Reverse Recovery Time	t_{rr}	-	35	-	nS	I_F= -7A, dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	60	-	nC	

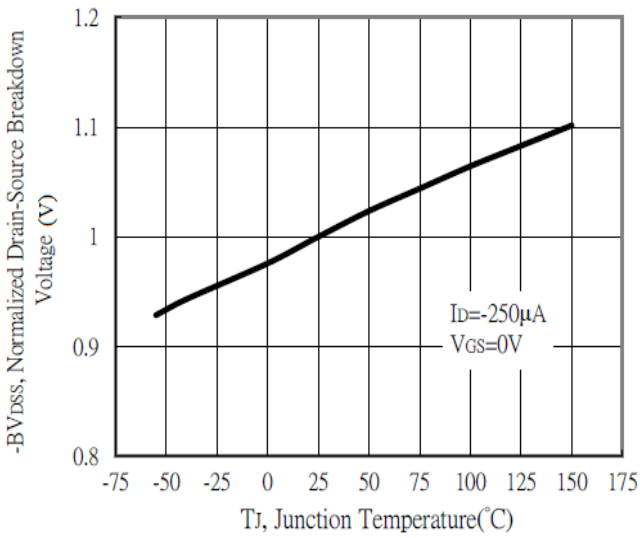
Notes:
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2oz copper.
2. Pulse width limited by maximum junction temperature.
3. The data tested by pulsed, pulse width≦300us, duty cycle≦2%.

CHARACTERISTIC CURVES

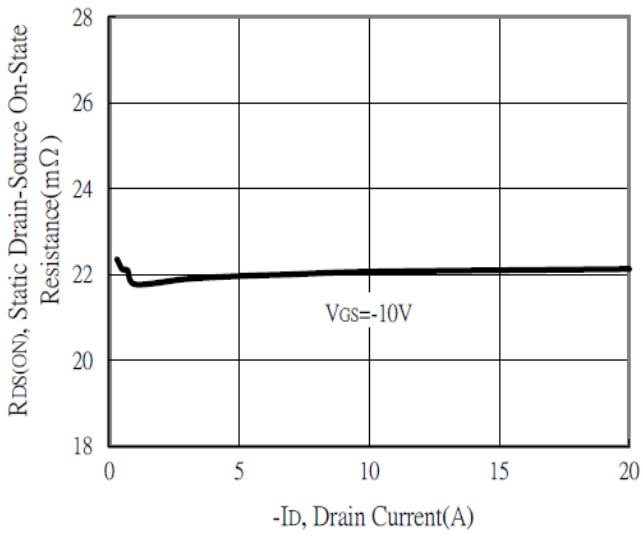
Typical Output Characteristics



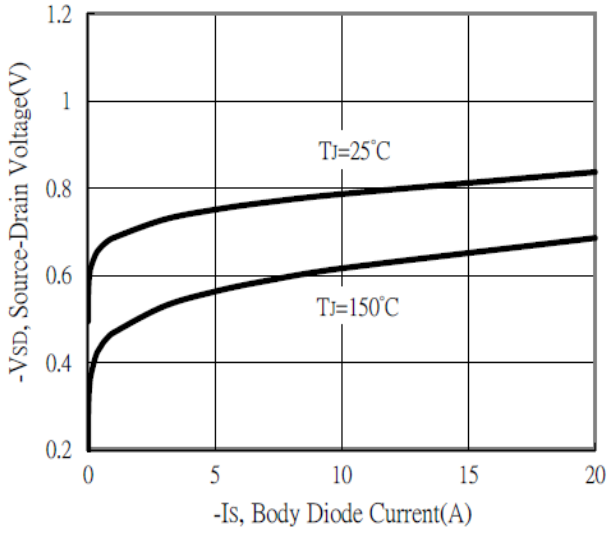
Breakdown Voltage vs Ambient Temperature



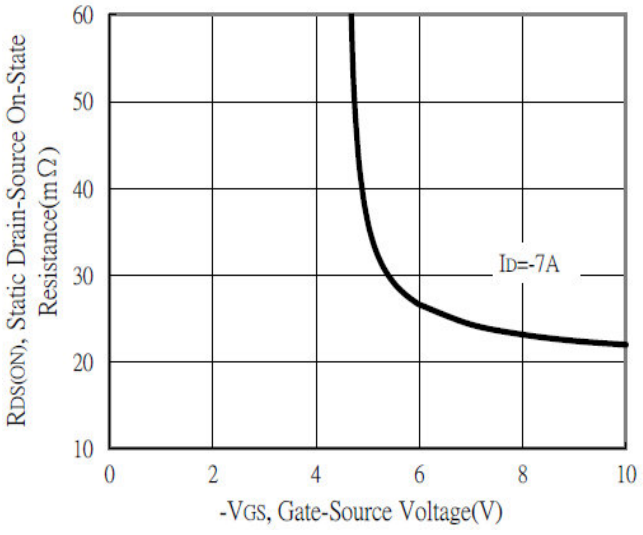
Static Drain-Source On-State resistance vs Drain Current



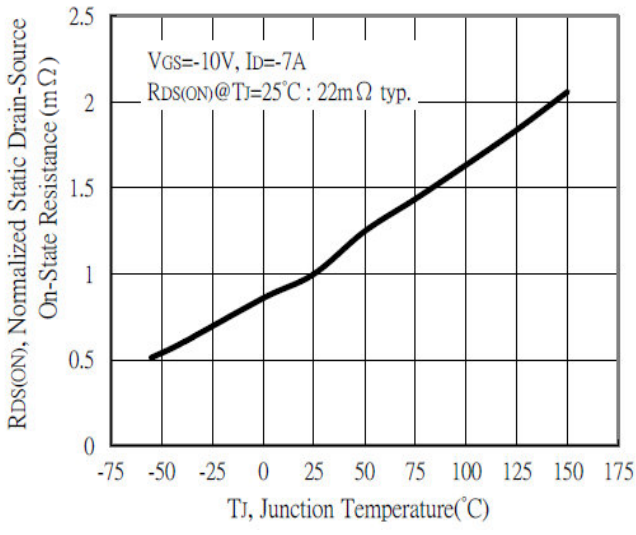
Body Diode Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

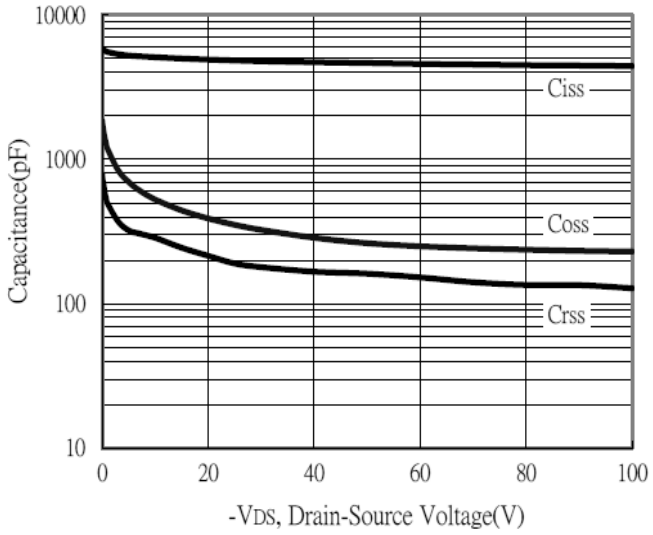


Drain-Source On-State Resistance vs Junction Temperature

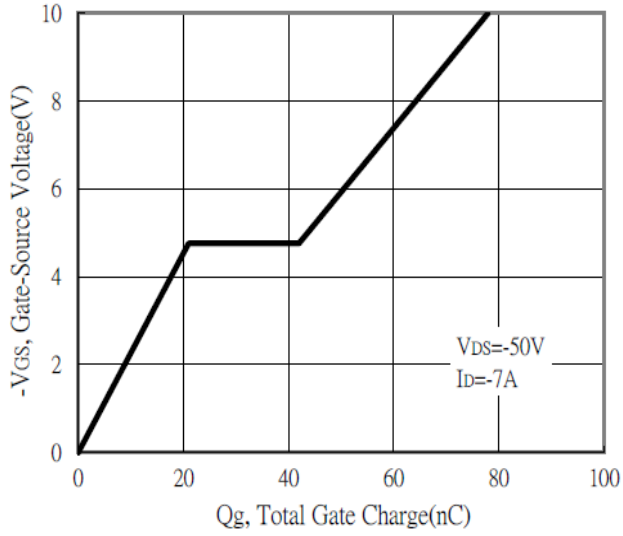


CHARACTERISTIC CURVES

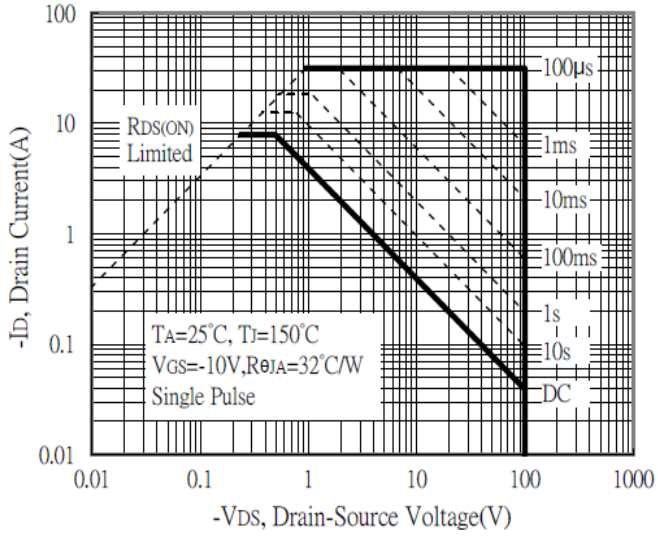
Capacitance vs Drain-to-Source Voltage



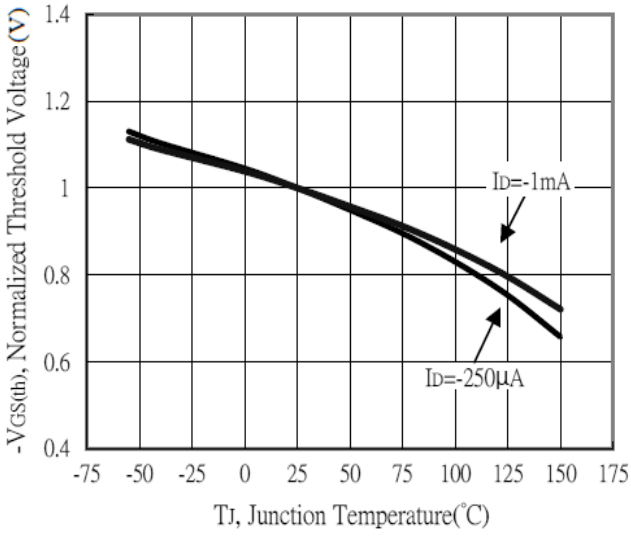
Gate Charge Characteristics



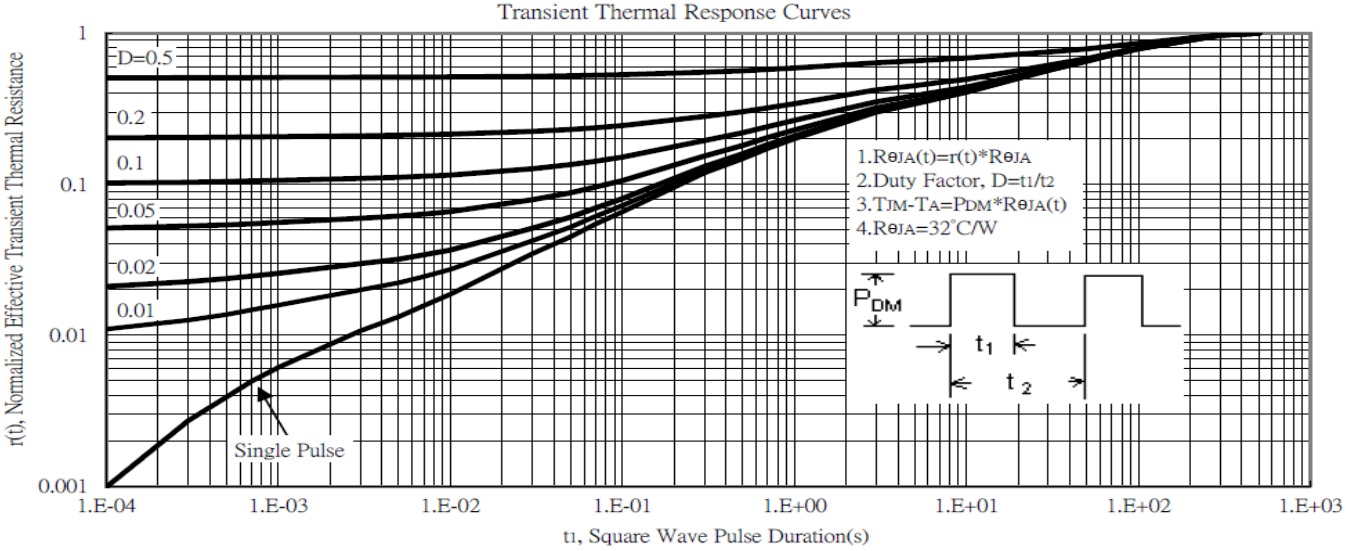
Maximum Safe Operating Area



Threshold Voltage vs Junction Temperature

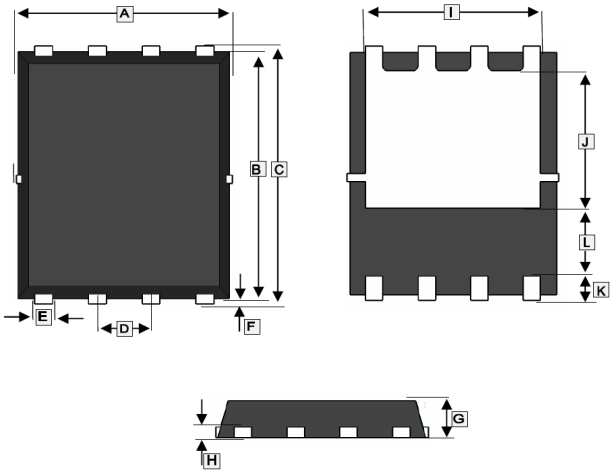


Transient Thermal Response Curves



PACKAGE OUTLINE DIMENSIONS

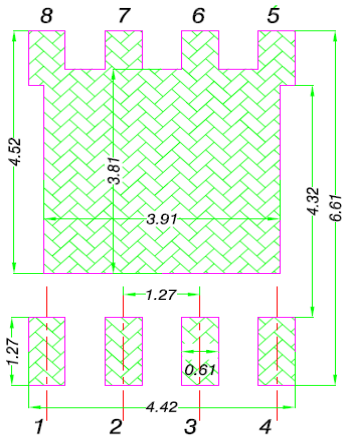
PR-8PP



REF.	Millimeter	
	Min.	Max.
A	4.90	5.10
B	5.70	5.90
C	5.90	6.20
D	1.27 BSC.	
E	0.33	0.51
F	0.06	0.20
G	0.80	1.10
H	0.254 REF.	
I	4.00 REF.	
J	3.40 REF.	
K	0.60 REF.	
L	1.40 REF.	

MOUNTING PAD LAYOUT

PR-8PP



*Dimensions in millimeters