

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

DESCRIPTION

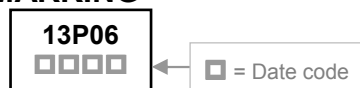
The SSD13P06-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSD13P06-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

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

MARKING



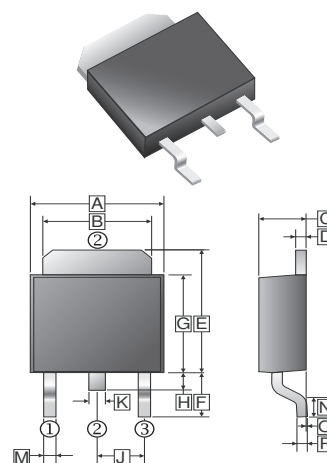
PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

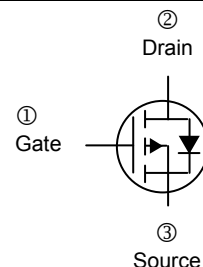
ORDER INFORMATION

Part Number	Type
SSD13P06-C	Lead (Pb)-free and Halogen-free

TO-252



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.90	J	2.186	2.386
B	4.95	5.50	K	0.64	1.14
C	2.10	2.50	M	0.50	1.14
D	0.43	0.9	N	1.3	1.8
E	6.0	7.5	O	0	0.13
F	2.90	REF.	P	0.58	REF.
G	5.40	6.40			
H	0.60	1.20			



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS} = -10V$	I_D	$T_C = 25^\circ C$	-13
		$T_C = 100^\circ C$	-8.3
		$T_A = 25^\circ C$	-3.3
		$T_A = 70^\circ C$	-2.7
Pulsed Drain Current ²	I_{DM}	-26	A
Total Power Dissipation ³	P_D	$T_C = 25^\circ C$	31.3
		$T_A = 25^\circ C$	2
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Rating			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	62	$^\circ C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	4	

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}	-60	-	-	V	$V_{GS}=0V, I_D=-250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5	V	$V_{DS}=V_{GS}, I_D=-250\mu A$	
Forward Transconductance	g_{fs}	-	8.7	-	S	$V_{DS}=-5V, I_D=-4A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	-1	uA	$V_{DS}=-48V, V_{GS}=0V$
		$T_J=55^\circ\text{C}$	-	-	-5		$V_{DS}=-48V, V_{GS}=0V$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	-	90	m Ω	$V_{GS}=-10V, I_D=-10A$	
		-	-	132		$V_{GS}=-4.5V, I_D=-5A$	
Gate Resistance	R_g	-	15	-	Ω	$V_{GS}=V_{DS}=0V, f=1\text{MHz}$	
Total Gate Charge	Q_g	-	11.8	-	nC	$I_D=-6A$ $V_{DS}=-20V$ $V_{GS}=-4.5V$	
Gate-Source Charge	Q_{gs}	-	1.9	-			
Gate-Drain Charge	Q_{gd}	-	6.5	-			
Turn-on Delay Time	$T_{d(on)}$	-	8.8	-	nS	$V_{DD}=-15V$ $I_D=-1A$ $V_{GS}=-10V$ $R_G=3.3\Omega$	
Rise Time	T_r	-	19.6	-			
Turn-off Delay Time	$T_{d(off)}$	-	47.2	-			
Fall Time	T_f	-	9.6	-			
Input Capacitance	C_{iss}	-	1080	-	pF	$V_{GS}=0V$ $V_{DS}=-15V$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	73	-			
Reverse Transfer Capacitance	C_{rss}	-	50	-			
Source-Drain Diode							
Diode Forward Voltage ²	V_{SD}	-	-	-1	V	$I_S=-1A, V_{GS}=0V, T_J=25^\circ\text{C}$	
Continuous Source Current ¹	I_S	-	-	-13	A	$V_G=V_D=0V, \text{Force Current}$	
Pulsed Source Current ²	I_{SM}	-	-	-26	A		

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Pulse width limited by maximum junction temperature.

CHARACTERISTIC CURVES

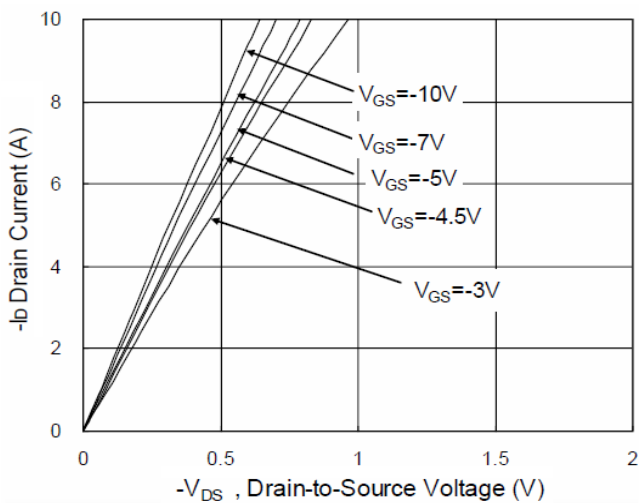


Fig.1 Typical Output Characteristics

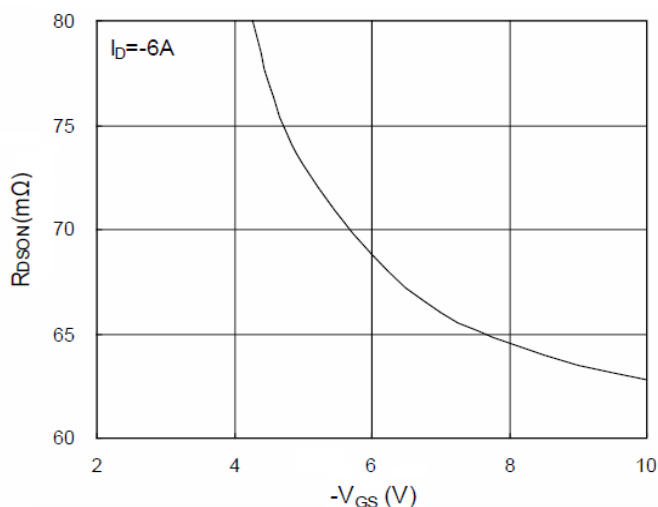


Fig.2 On-Resistance v.s Gate-Source

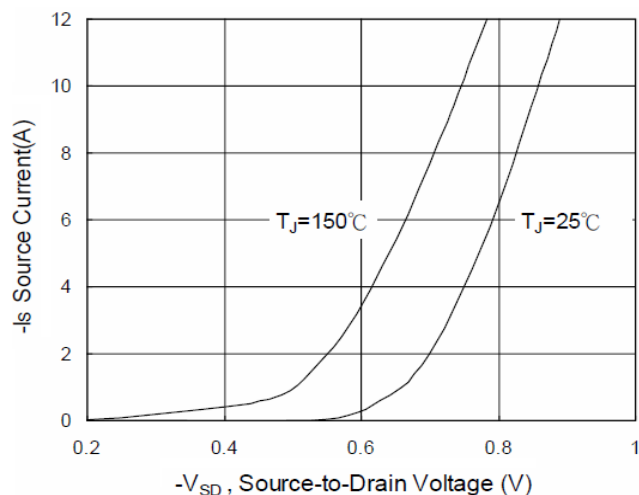


Fig.3 Forward Characteristics of Reverse

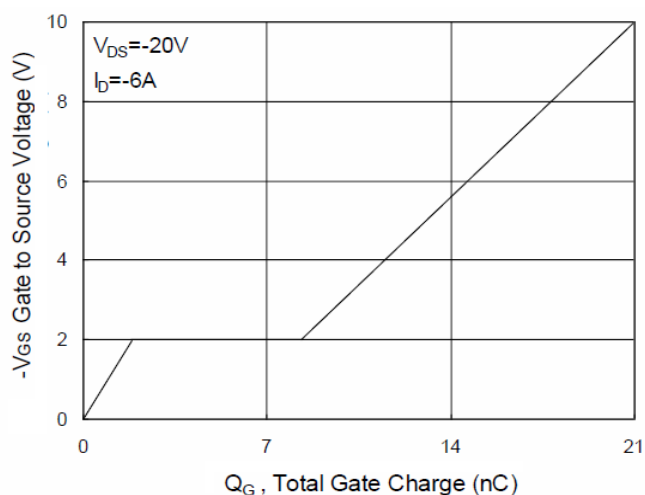


Fig.4 Gate-Charge Characteristics

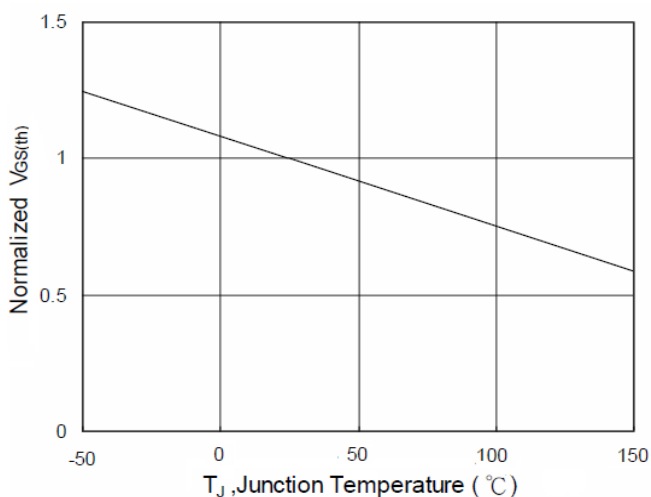


Fig.5 Normalized V_{GS(th)} v.s T_J

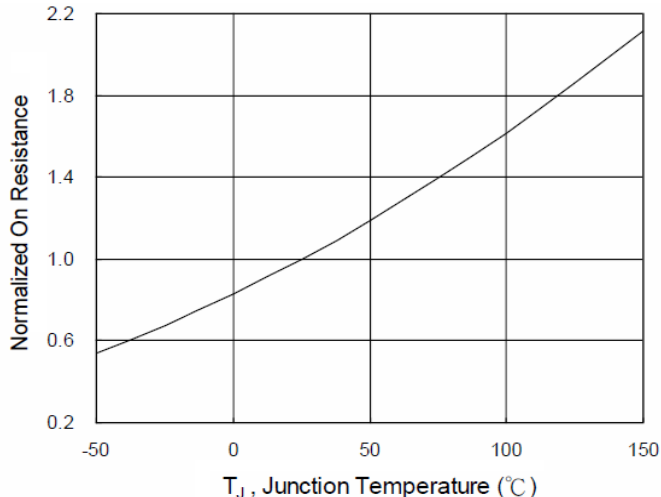


Fig.6 Normalized R_{DS(ON)} v.s T_J

CHARACTERISTIC CURVES

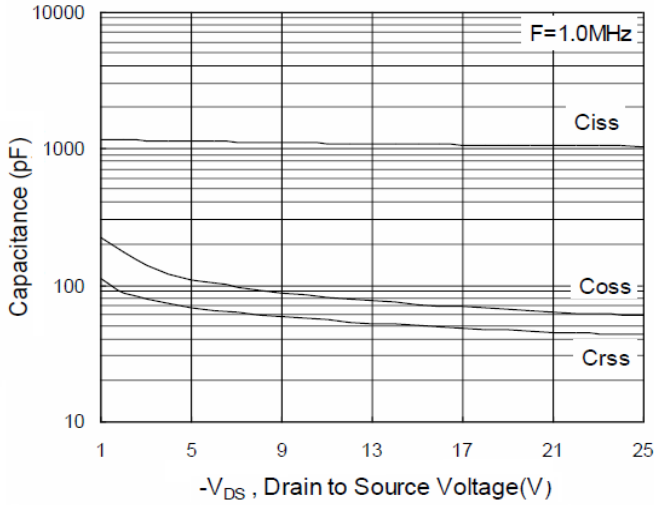


Fig.7 Capacitance

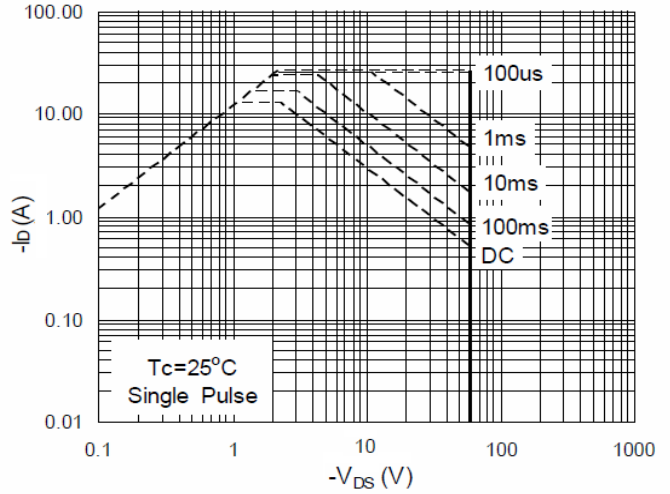


Fig.8 Safe Operating Area

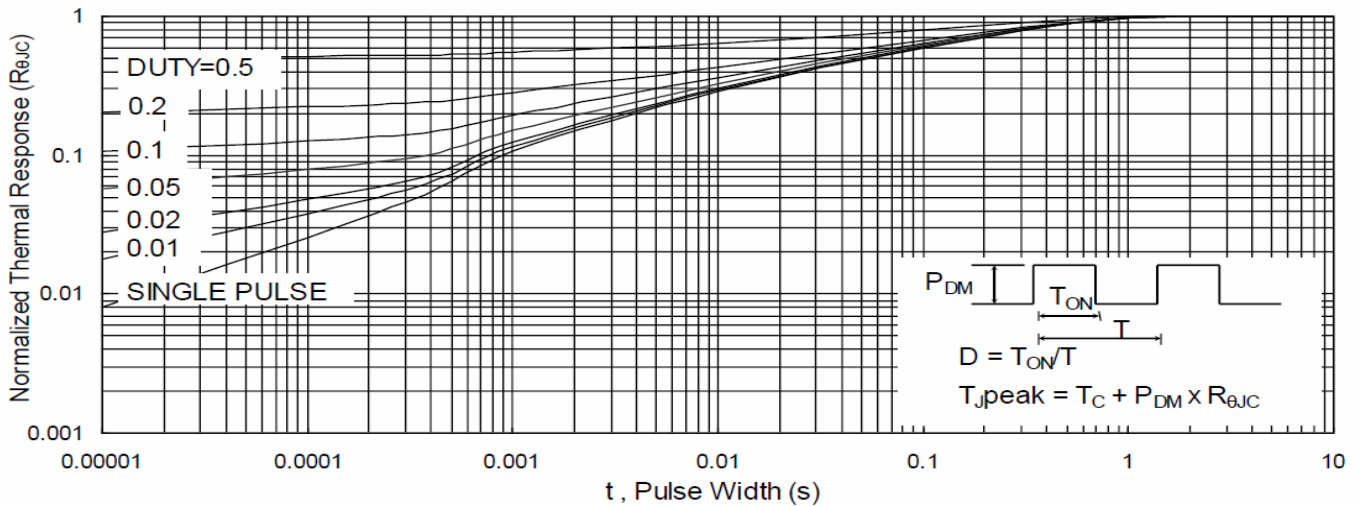


Fig.9 Normalized Maximum Transient Thermal Impedance

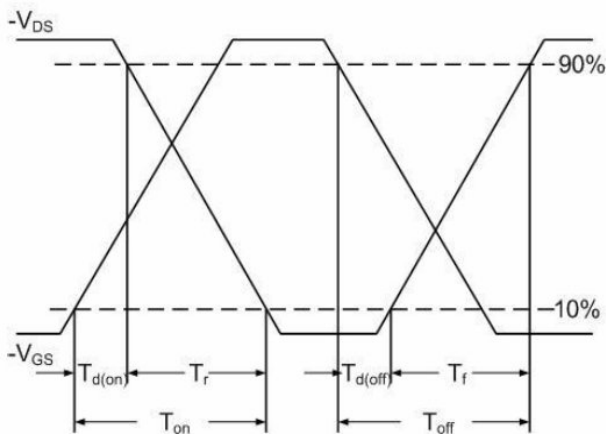


Fig.10 Switching Time Waveform

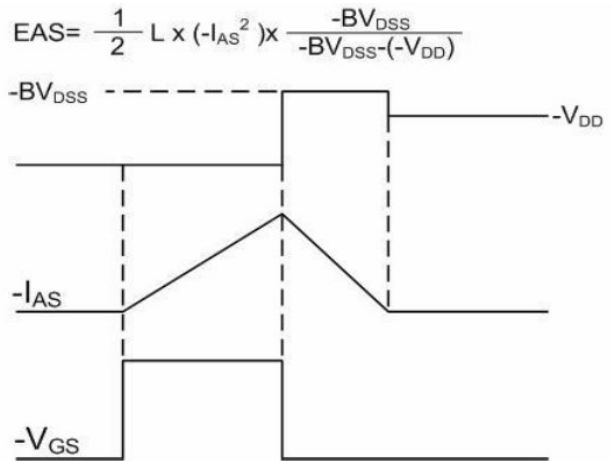


Fig.11 Unclamped Inductive Switching Waveform