Elektronische Bauelemente

SSF1321P

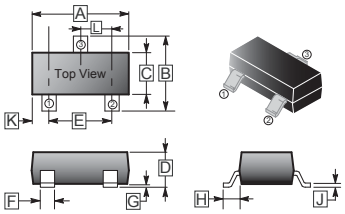
-1.7A, -20V, $R_{DS(on)}$ 0.079Ω
P-Channel MOSFET

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

DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

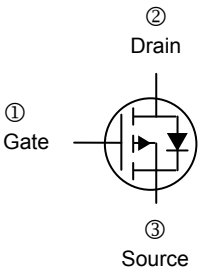
SOT-323



FEATURES

- Low RDS(on) provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SOT-323 saves board space.
- Fast switching speed.
- High performance trench technology.

PRODUCT SUMMARY		
V_{DS}(V)	R_{DS}(on) (Ω)	I_D(A)
-20	0.079@V_{GS}= -4.5V	-1.7
	0.110@V_{GS}= -2.5V	-1.5



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.80	2.20	G	0.100 REF.	
B	1.80	2.45	H	0.525 REF.	
C	1.15	1.35	J	0.08	0.25
D	0.80	1.10	K	-	-
E	1.20	1.40	L	0.650 TYP.	
F	0.20	0.40			

MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

PARAMETER		SYMBOL	RATING	UNIT
Drain – Source Voltage		V_{DS}	-20	V
Gate – Source Voltage		V_{GS}	±8	V
Continuous Drain Current [a]		I_D @ T_A=25°C	-1.7	A
		I_D @ T_A=70°C	-1.4	
Pulsed Drain Current [b]		I_{DM}	-2.5	A
Continuous Source Current (Diode Conduction) [a]		I_S	±0.28	A
Power Dissipation [a]		P_D@ T_A=25°C	0.34	W
		P_D@ T_A=70°C	0.22	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	°C
THERMAL RESISTANCE RATINGS				
Maximum Thermal Resistance Junction-Ambient [a]	t ≦ 5 sec	$R_{\theta JA}$	375	°C / W
	Steady-State		430	

Note:

a. Surface Mounted on 1" x 1" FR4 Board.

b. Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITION
STATIC CARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(th)}$	-0.4	-	-	V	V_{DS}= V_{GS}, I_D = -250μA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{DS}= 0V, V_{GS}= ±8V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	V_{DS}= -16V, V_{GS}= 0V
		-	-	-10		V_{DS}= -16V, V_{GS}= 0V, T_J= 55°C
On-State Drain Current [a]	$I_{D(on)}$	-5	-	-	A	V_{DS}= -5V, V_{GS}= -4.5V
Drain-Source On-Resistance [a]	$R_{DS(ON)}$	-	-	79	mΩ	V_{GS}= -4.5V, I_D= -1.7A
		-	-	110		V_{GS}= -2.5V, I_D= -1.5A
Forward Transconductance [a]	g_{FS}	-	9	-	S	V_{DS}= -5V, I_D= -1.25A
Diode Forward Voltage	V_{SD}	-	-0.65	-	V	I_S= -0.46A, V_{GS}= 0V
DYNAMIC CHARACTERISTICS [b]						
Total Gate Charge	Q_g	-	7.2	-	nC	V_{DS}= -10V
Gate-Source Charge	Q_{gs}	-	1.7	-		V_{GS}= -4.5V
Gate-Drain Charge	Q_{gd}	-	1.5	-		I_D= -1.7A
Turn-on Delay Time	$T_{d(ON)}$	-	10	-	nS	V_{DD}= -10V
Rise Time	T_R	-	9	-		I_L= -1A
Turn-off Delay Time	$T_{d(OFF)}$	-	27	-		V_{GEN}= -4.5V
Fall Time	T_F	-	11	-		R_G= 6Ω

Notes：

a. Pulse test：PW ≦ 300us duty cycle ≦ 2%.

b. Guaranteed by design, not subject to production testing.

c. Repetitive rating, pulse width limited by junction temperature.

CHARACTERISTIC CURVES

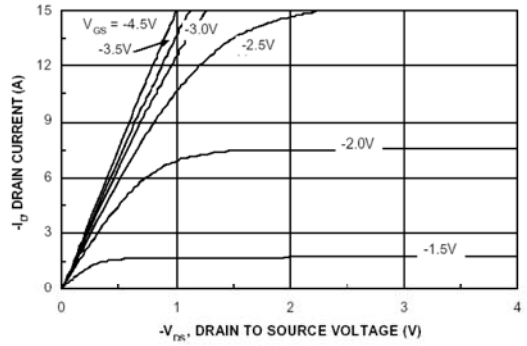


Figure 1. On-Region Characteristics

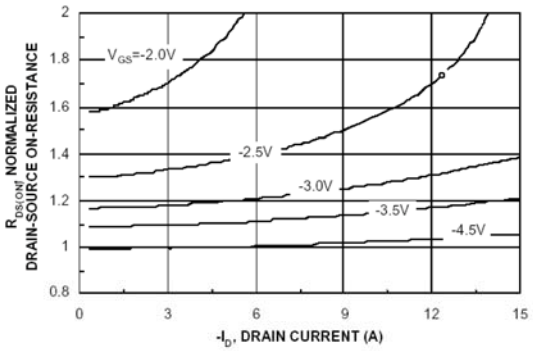


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

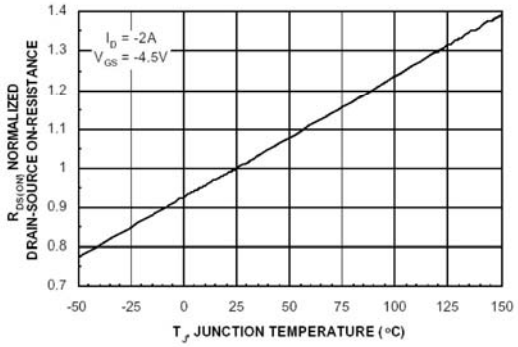


Figure 3. On-Resistance Variation with Temperature

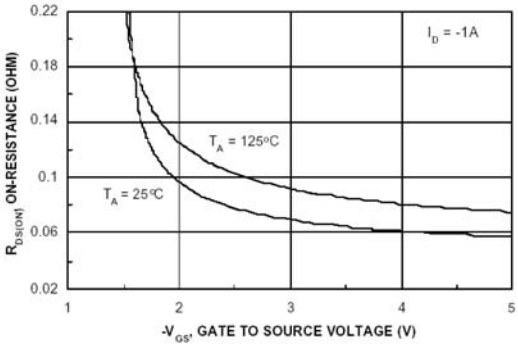


Figure 4. On-Resistance Variation with Gate to Source Voltage

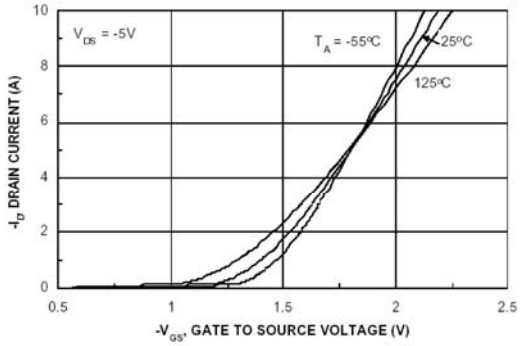


Figure 5. Transfer Characteristics

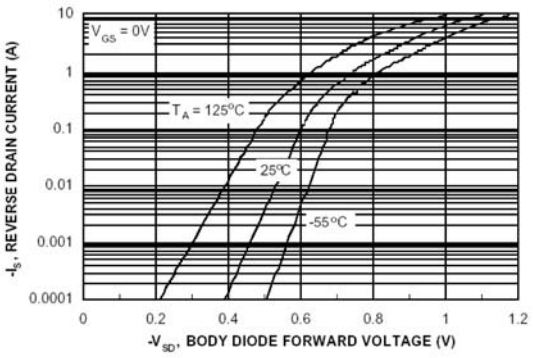


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

CHARACTERISTIC CURVES

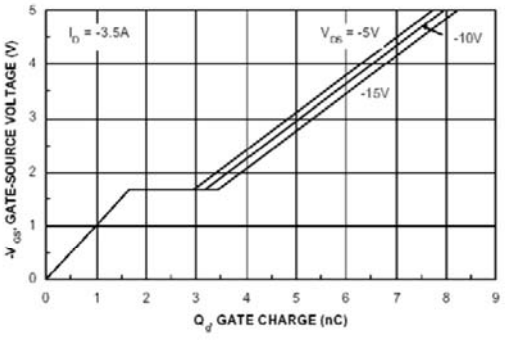


Figure 7. Gate Charge Characteristic

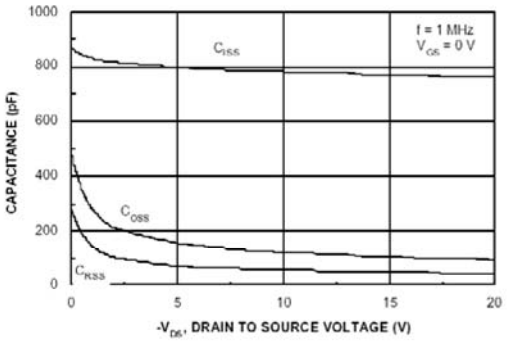


Figure 8. Capacitance Characteristic

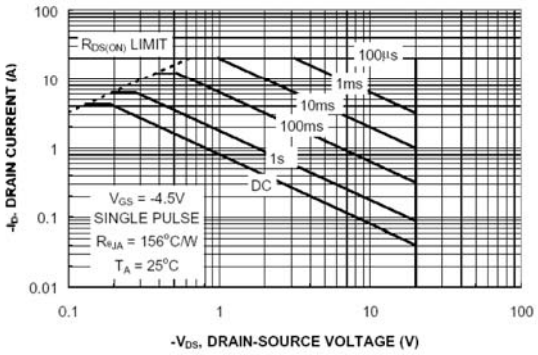


Figure 9. Maximum Safe Operating Area

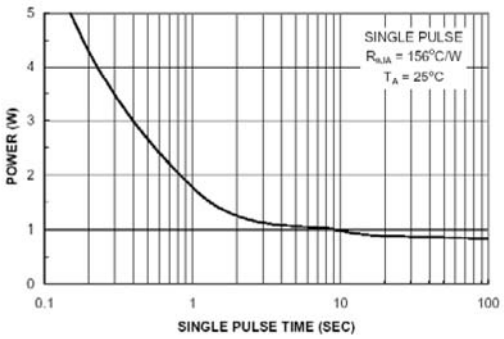


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

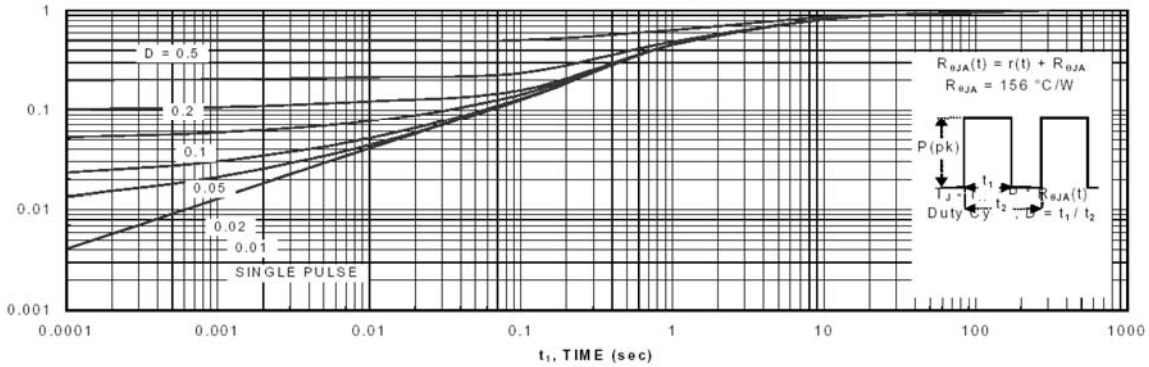


Figure 11. Transient Thermal Response Curve.