Elektronische Bauelemente

SSF1320N

2A , 20V , $R_{DS(ON)}$ 58 mΩ

N-Channel Enhancement Mode MOSFET

RoHS Compliant Product

A suffix of "-C" specifies halogen and 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.

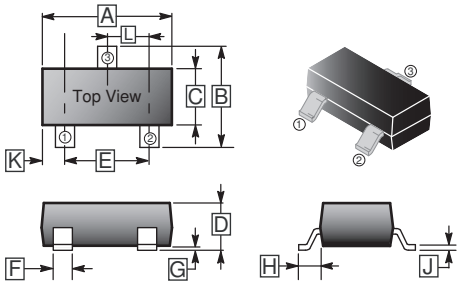
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low gate charge
- Fast switch
- Miniature SOT-323 surface mount package saves board space.

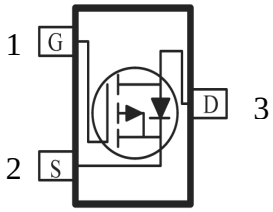
APPLICATION

DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

SOT-323



REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter Max.
A	1.80	2.20	G	0.1 REF.	
B	1.80	2.45	H	0.525 REF.	
C	1.1	1.4	J	0.08	0.25
D	0.80	1.10	K	0.8 TYP.	
E	1.20	1.40	L	0.65 TYP.	
F	0.15	0.40			



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-323	3K	7 inch

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

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current [1]	T_A=25°C	I_D	2	A
	T_A=70°C		1.7	A
Pulsed Drain Current [2]		I_{DM}	±20	A
Continuous Source Current (Diode Conduction) [1]		I_S	1.6	A
Power Dissipation [1]	T_A=25°C	P_D	0.34	W
	T_A=70°C		0.22	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Ratings				
Maximum Junction to Ambient [1]	t ≦ 5 sec	$R_{\theta JA}$	100	°C / W
	Steady State		166	

Notes:

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

2 Pulse width limited by maximum junction temperature.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-Threshold Voltage	$V_{GS(th)}$	0.7	-	-	V	V_{DS}=V_{GS}, I_D=250uA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS}=0, V_{GS}= ±8V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	uA	V_{DS}=16V, V_{GS}=0
		-	-	10		V_{DS}=16V, V_{GS}=0, T_J=55°C
On-State Drain Current [1]	$I_{D(on)}$	10	-	-	A	V_{DS} =5V, V_{GS}=4.5V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	58	mΩ	V_{GS}=4.5V, I_D=2A
		-	-	82		V_{GS}=2.5V, I_D=1.7A
Forward Transconductance [1]	g_{fs}	-	11.3	-	S	V_{DS}=10V, I_D=2A
Diode Forward Voltage	V_{SD}	-	0.75	-	V	I_S=1.6A, V_{GS}=0
Dynamic [2]						
Input Capacitance	C_{iss}	-	720	-	pF	V_{DS}=15V, V_{GS}=0, f=1 MHz
Output Capacitance	C_{oss}	-	165	-		
Reverse Transfer Capacitance	C_{rss}	-	60	-		
Total Gate Charge	Q_g	-	7.5	-	nC	V_{DS}=10V, V_{GS}=4.5V, I_D=2A
Gate-Source Charge	Q_{gs}	-	0.6	-		
Gate-Drain Charge	Q_{gd}	-	1	-		
Turn-on Delay Time	$T_{d(on)}$	-	8	-	nS	V_{DD}=10V, V_{GEN}=4.5V, R_L=15Ω, I_D=1A
Rise Time	T_r	-	24	-		
Turn-off Delay Time	$T_{d(off)}$	-	35	-		
Fall Time	T_f	-	10	-		

Notes:
1 Pulse test：PW ≦ 300 us duty cycle ≦ 2%.
2 Guaranteed by design, not subject to production testing.

CHARACTERISTIC CURVE

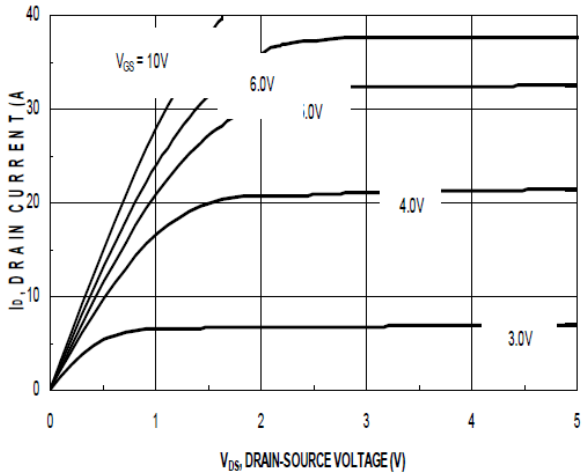


Figure 1. On-Region Characteristics

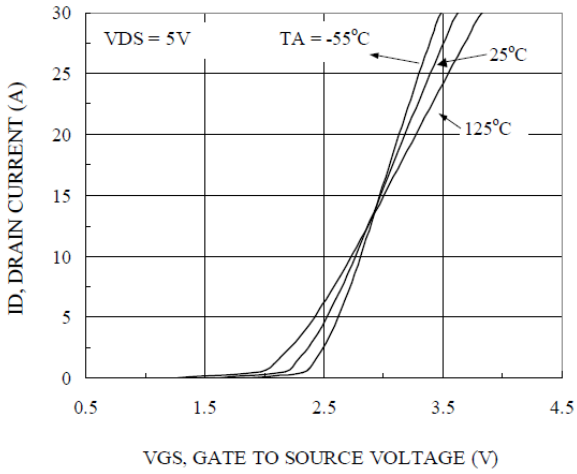


Figure 2. Body Diode Forward Voltage Variation with Source Current and Temperature

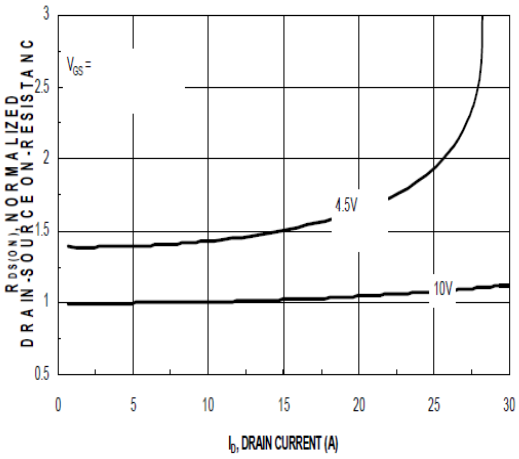


Figure 3. On Resistance Vs Vgs Voltage

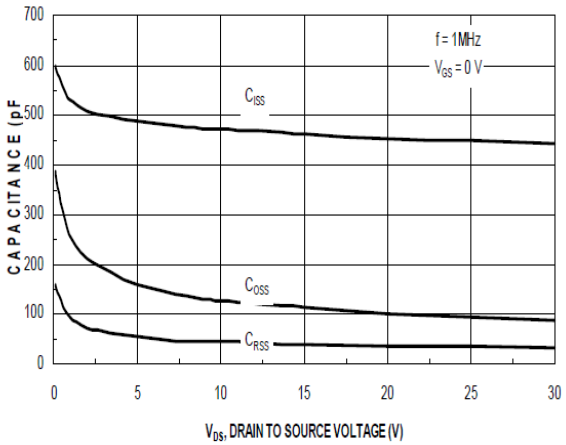


Figure 4. Capacitance Characteristics

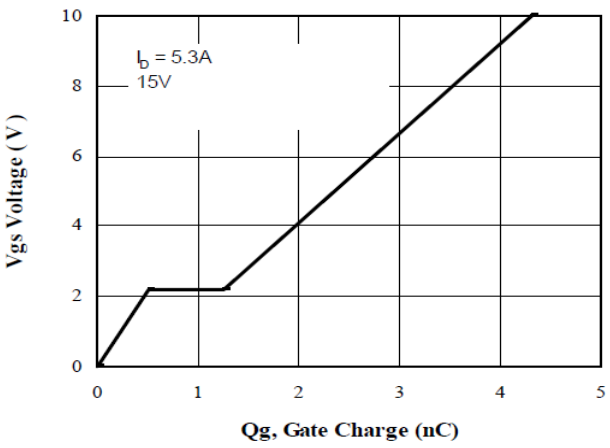


Figure 5. Gate Charge Characteristics

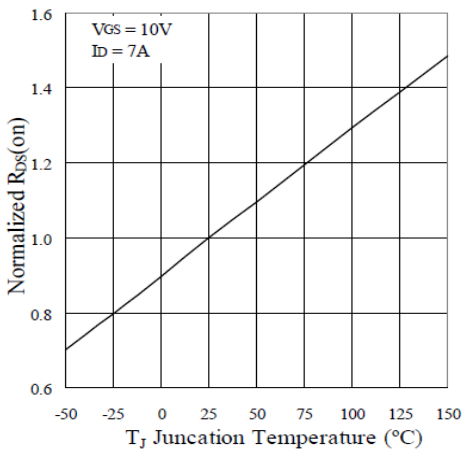


Figure 6. On-Resistance Variation with Temperature

CHARACTERISTIC CURVE

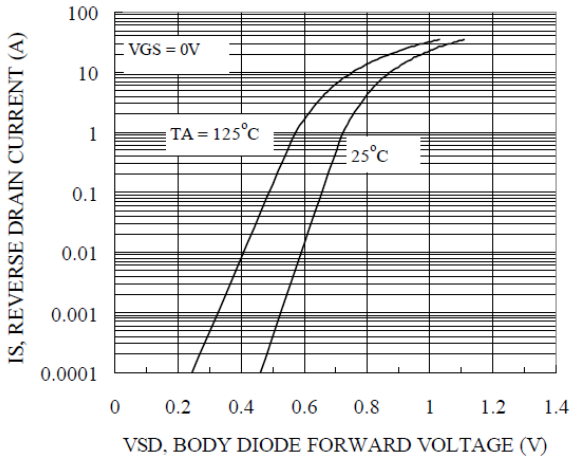


Figure 7. Transfer Characteristics

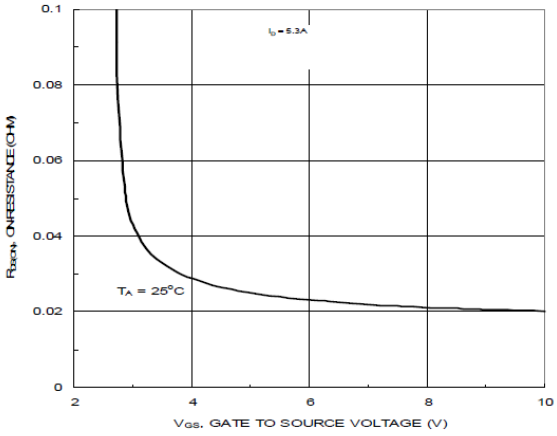


Figure 8. On-Resistance with Gate to Source Voltage

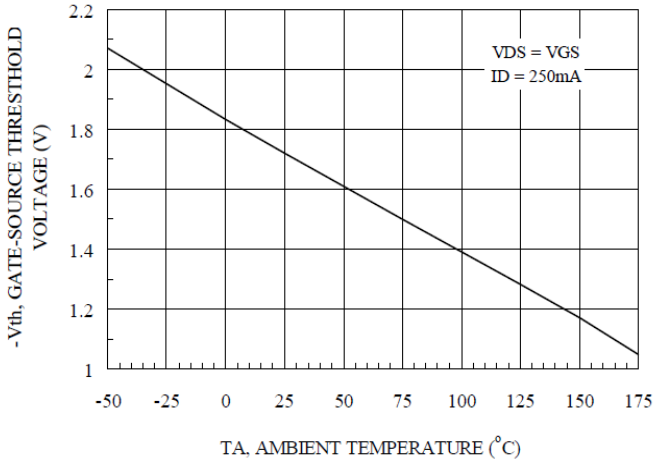


Figure 9. Vth Gate to Source Voltage Vs Temperature

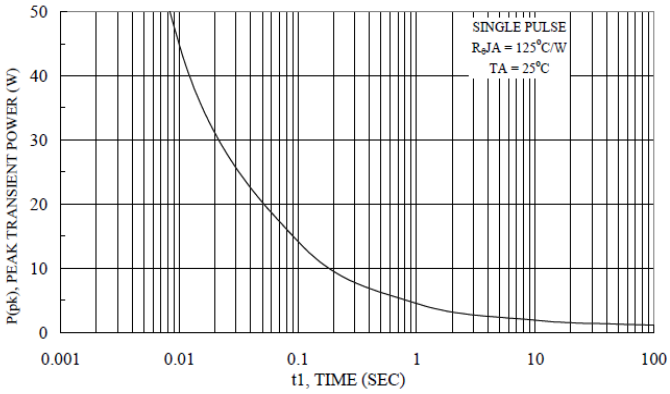


Figure 10. Single Pulse Maximum Power Dissipation

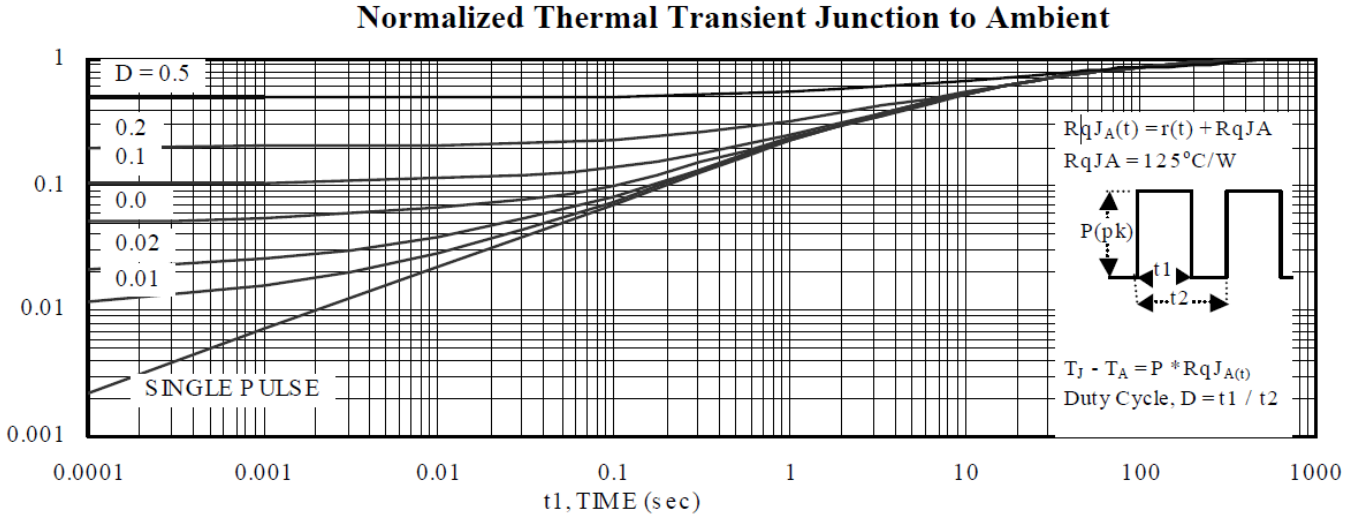


Figure 11. Transient Thermal Response Curve