Elektronische Bauelemente

STT3402N

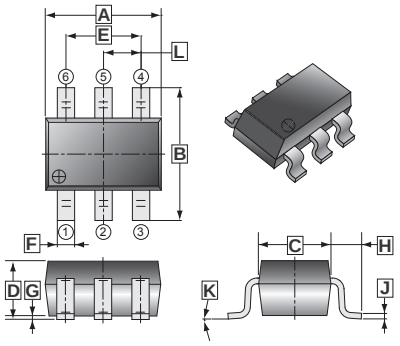
6.3 A, 30 V, $R_{DS(ON)}$ 27 mΩ
N-Channel Enhancement Mode Mos.FET

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

DESCRIPTION

These miniature surface mount MOSFETs utilize High Cell Density process. Low $R_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are power switch, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

TSOP-6



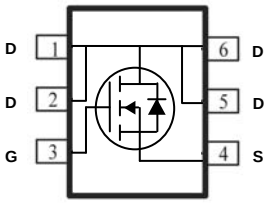
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60 REF.	
C	1.40	1.80	J	0.12 REF.	
D	1.10 MAX.		K	0°	10°
E	1.90 REF.		L	0.95 REF.	
F	0.30	0.50			

TYPICAL APPLICATIONS

- Low $R_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life.
- Low Gate Charge.
- Fast Switch.
- Miniature TSOP-6 Surface Mount Package Saves Board Space.

PRODUCT SUMMARY

STT3402N		
V_{DS}(V)	R_{DS}(on) (mΩ)	I_D(A)
30	0.027@V_{GS}= 10V	6.3
	0.035@V_{GS}= 4.5V	5.5



PACKAGE INFORMATION

Package	MPQ	LeaderSize
TSOP-6	3K	7' inch

ABSOLUTE MAXIMUM RATINGS(T_A=25°C UNLESS OTHERWISE NOTED)

Parameter		Symbol	Ratings Maximum	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]	T_A= 25°C	I_D	6.3	A
	T_A= 70°C		5.2	
Pulsed Drain Current [2]		I_{DM}	±20	A
Continuous Source Current (Diode Conduction) [1]		I_S	1.3	A
Power Dissipation [1]	T_A= 25°C	P_D	1.6	W
	T_A= 70°C		1.0	
Operating Junction and Storage Temperature Range		Tj, Tstg	-55 ~ 150	°C

THERMAL RESISTANCE RATINGS				
Parameter		**Symbol**	**Maximum**	**Unit**
Maximum Junction to Ambient [1]	t ≦ 5 sec	$R_{\theta JA}$	78	°C / W

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
SWITCH OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30	-	-	V	V_{GS}=0V, I_D= 250uA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS}= 0V, V_{GS}= ±20V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	uA	V_{DS}= 24V, V_{GS}= 0V
		-	-	10		V_{DS}= 24V, V_{GS}= 0V, T_J= 55°C
SWITCH ON CHARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(th)}$	1.0	1.6	3.0	V	V_{DS}=V_{GS}, I_D= 250uA
On-State Drain Current [1]	$I_{D(on)}$	20	-	-	A	V_{DS} = 5V, V_{GS}= 10V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	23	27	mΩ	V_{GS}= 10V, I_D= 6.3A
		-	32	39		V_{GS}= 10V, I_D= 6.3A, T_J= 55°C
		-	29	35		V_{GS}= 4.5V, I_D= 5.5A
Forward Transconductance [1]	g_{fs}	-	45	-	S	V_{DS}= 10V, I_D= 6.3A
Diode Forward Voltage [1]	V_{SD}	-	0.75	1.2	V	I_S= 1.3A, V_{GS}= 0V
DYNAMIC [b]						
Total Gate Charge	Q_g	-	9	13	nC	V_{DS}= 15V, V_{GS}= 5V, I_D= 6.3A, R_L= 6Ω
Gate-Source Charge	Q_{gs}	-	2.9	-		
Gate-Drain Charge	Q_{gd}	-	3.2	-		
SWITCHING CHARACTERISTICS						
Turn-on Delay Time	$T_{d(on)}$	-	6	13	nS	V_{DS}= 15V, V_{GEN}= 10V, R_L= 6Ω, I_D= 1A, R_{GEN}= 6Ω
Rise Time	T_r	-	10	19		
Turn-off Delay Time	$T_{d(off)}$	-	18	30		
Fall Time	T_f	-	5	13		

Notes

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

2 Guaranteed by design, not subject to production testing.

CHARACTERISTIC CURVES

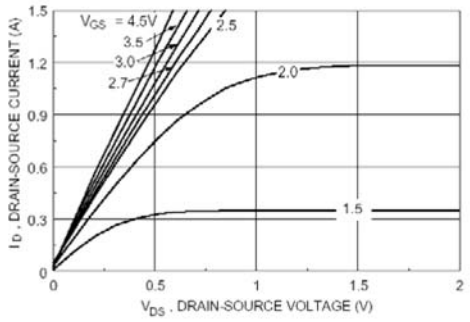


Figure 1. On-Region Characteristics

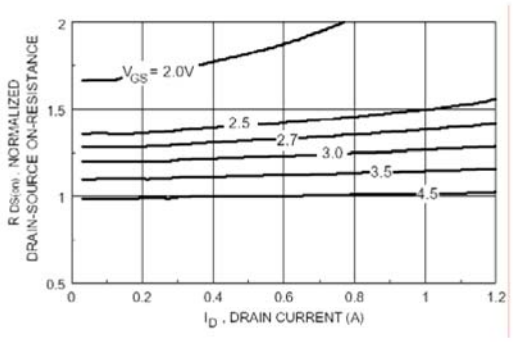


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

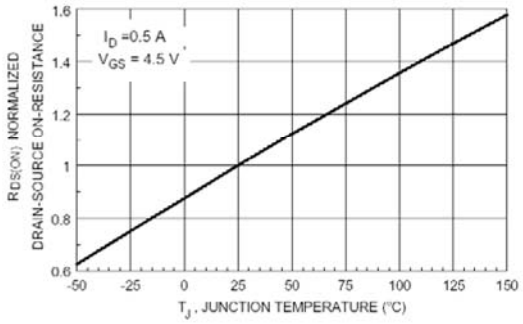


Figure 3. On-Resistance Variation with Temperature

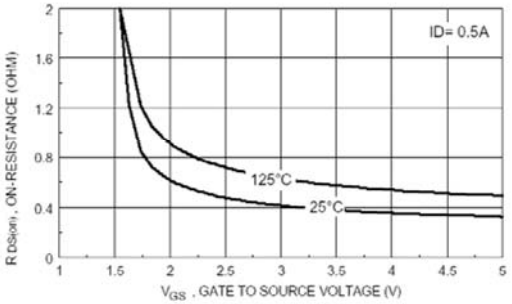


Figure 4. On-Resistance Variation with Gate to Source Voltage

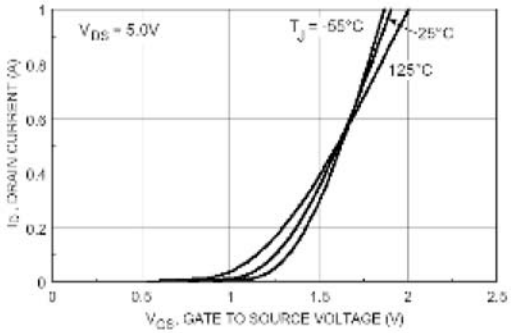


Figure 5. Transfer Characteristics

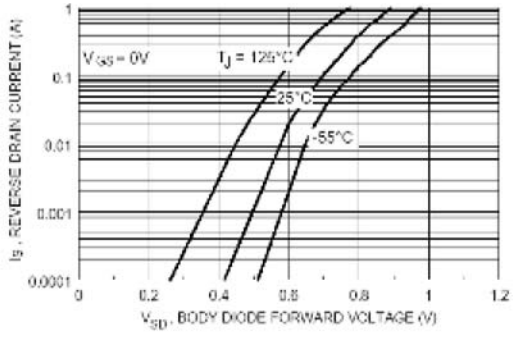


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

CHARACTERISTIC CURVES

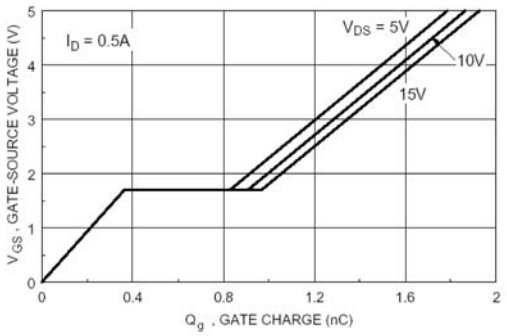


Figure 7. Gate Charge Characteristics.

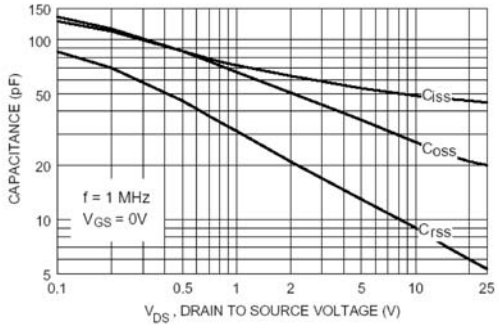


Figure 8. Capacitance Characteristics.

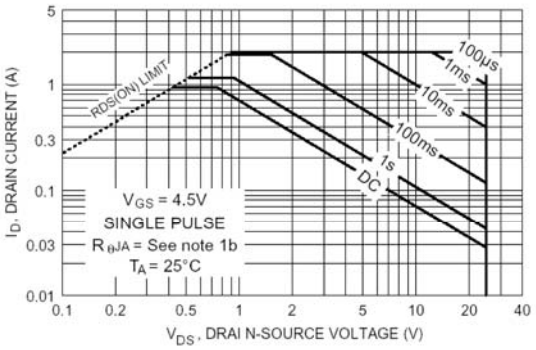


Figure 9. Maximum Safe Operating Area.

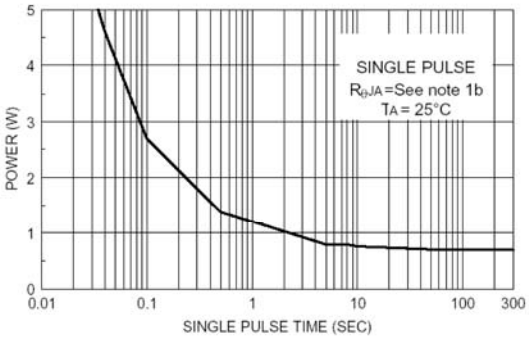


Figure 10. Single Pulse Maximum Power Dissipation.

Normalized Thermal Transient Junction to Ambient

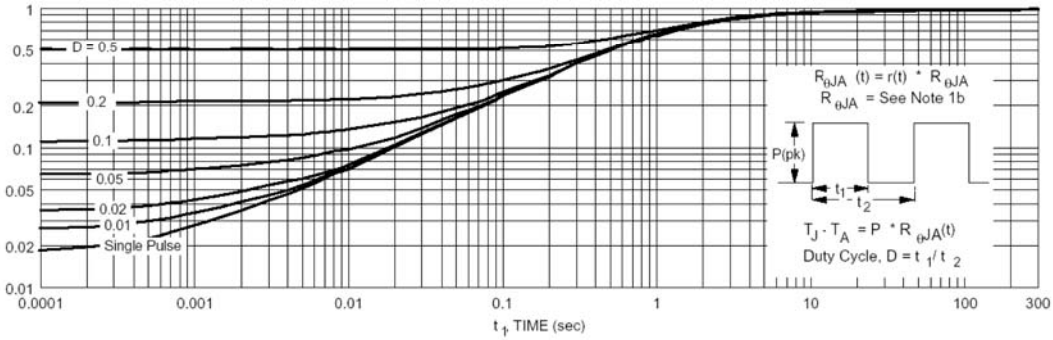


Figure 11. Transient Thermal Response Curve