Elektronische Bauelemente

SDT3A5N06-C

3.5A, 60V, $R_{DS(ON)}$ 100 mΩ

N-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

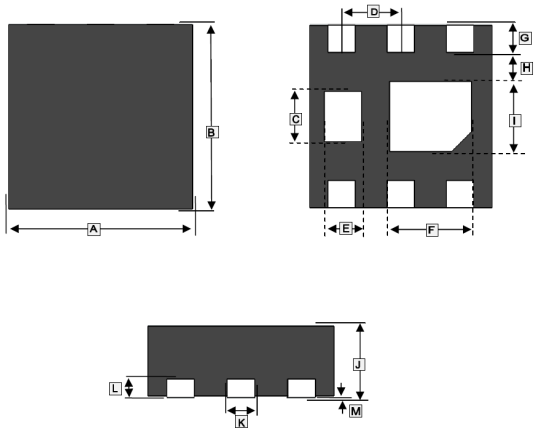
A suffix of "-C" specifies halogen and lead-free

DESCRIPTION

The SDT3A5N06-C is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications.

The SDT3A5N06-C meet the RoHS and Green Product requirement with full function reliability approved.

DFN2x2-6J

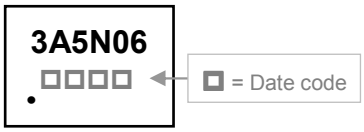


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.924	2.076	H	0.20	-
B	1.924	2.076	I	0.85	1.05
C	0.46	0.66	J	0.70	0.90
D	0.65 TYP.		K	0.20	0.40
E	0.20	0.40	L	0.203REF	
F	0.80	1.00	M	0.00	0.05
G	0.174	0.326			

FEATURES

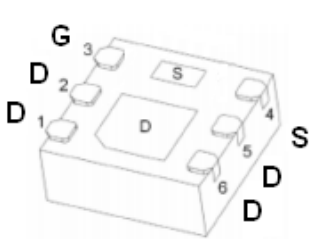
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Green Device Available

MARKING

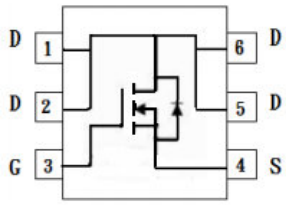


PACKAGE INFORMATION

Package	MPQ	Leader Size
DFN2×2-6J	3K	7 inch



Top View



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current @V_{GS}=10V [1]	T_A=25°C	I_D	3.5	A
	T_A=70°C		2.8	
Pulsed Drain Current [3]		I_{DM}	14	A
Power Dissipation		P_D	2	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Rating				
Thermal Resistance from Junction to Ambient [1]		$R_{\theta JA}$	t≦10sec , 62.5	°C / W
			Steady State , 100	
Thermal Resistance from Junction to Ambient [2]			250	

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

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	V_{GS}=0, I_D=250μA
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transfer conductance	g_{fs}	-	13	-	S	V_{DS}=5V, I_D=2A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{DS}=0,V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=48V, V_{GS}=0,T_J=25°C
		-	-	5		V_{DS}=48V, V_{GS}=0, T_J=55°C
Drain-Source On-Resistance [4]	$R_{DS(ON)}$	-	-	100	mΩ	V_{GS}=10V, I_D=3A
		-	-	110		V_{GS}=4.5V, I_D=2A
Total Gate Charge	Q_g	-	5	-	nC	V_{DS}=48V V_{GS}=4.5V I_D=2A
Gate-Source Charge	Q_{gs}	-	1.68	-		
Gate-Drain Charge	Q_{gd}	-	1.9	-		
Turn-On Delay Time	$T_{d(on)}$	-	1.6	-	nS	V_{DS}=30V V_{GS}=10V I_D=2A R_G=3.3Ω
Rise Time	T_r	-	7.2	-		
Turn-Off Delay Time	$T_{d(off)}$	-	25	-		
Fall Time	T_f	-	14.4	-		
Input Capacitance	C_{iss}	-	511	-	pF	V_{DS}=15V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	38	-		
Reverse Transfer Capacitance	C_{rss}	-	25	-		
Source-Drain Diode						
Continuous Source Current [1]	I_S	-	-	3.5	A	
Pulsed Source Current [3]	I_{SM}	-	-	14	A	
Forward On Voltage [4]	V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	-	9.7	-	nS	I_F=2A , dI/dt=100A/μs , T_J=25°C
Reverse Recovery Charge	Q_{rr}	-	5.8	-	nC	

Notes:
1. Surface Mounted on 1” x 1” FR4 Board with 2OZ copper.
2. When mounted on minimum pad of 2 oz. copper.
3. Pulse width limited by maximum junction temperature.
4. Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%.

TYPICAL CHARACTERISTIC CURVE

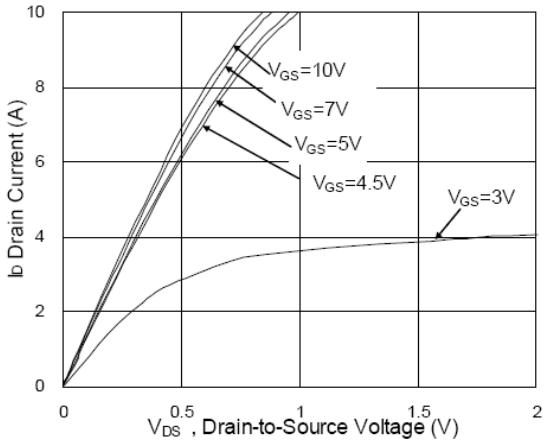


Fig.1 Typical Output Characteristics

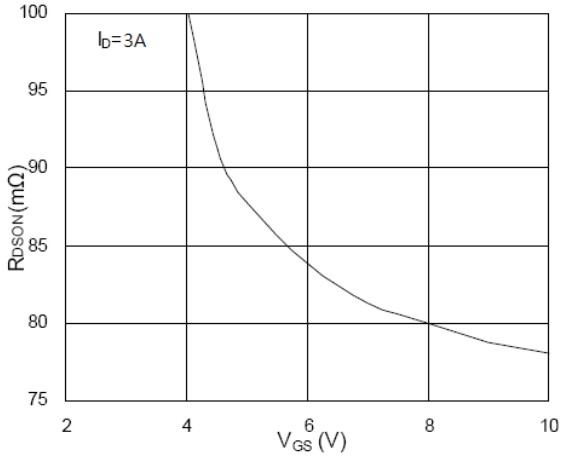


Fig.2 On-Resistance v.s Gate-Source

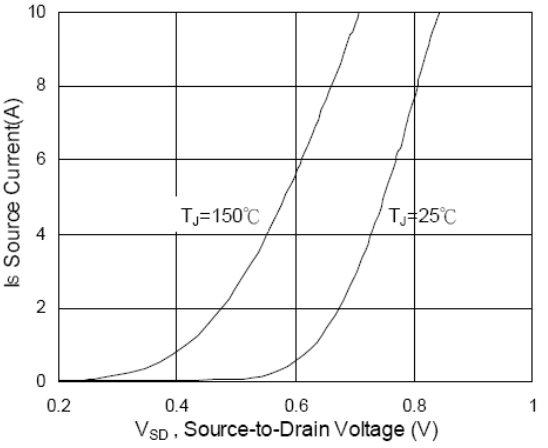


Fig.3 Forward Characteristics of Reverse

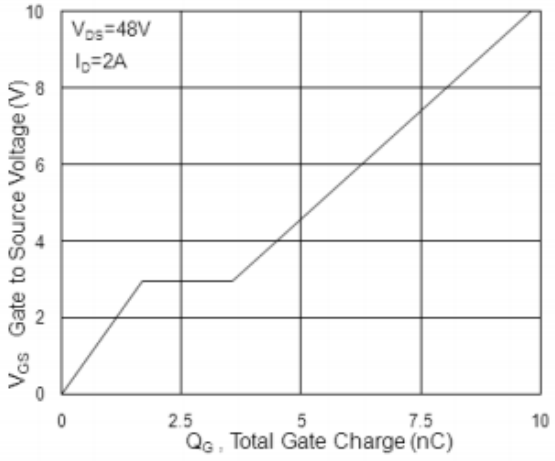


Fig.4 Gate-Charge Characteristics

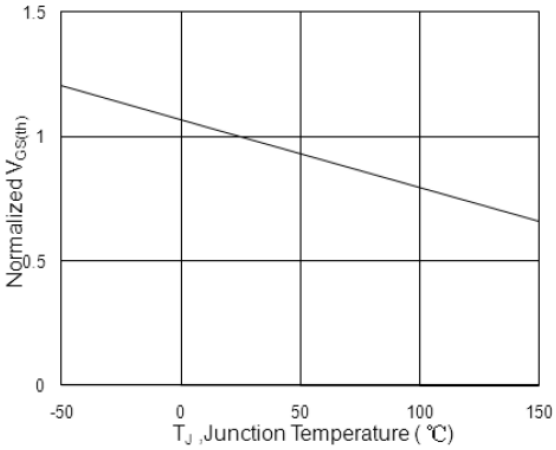


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

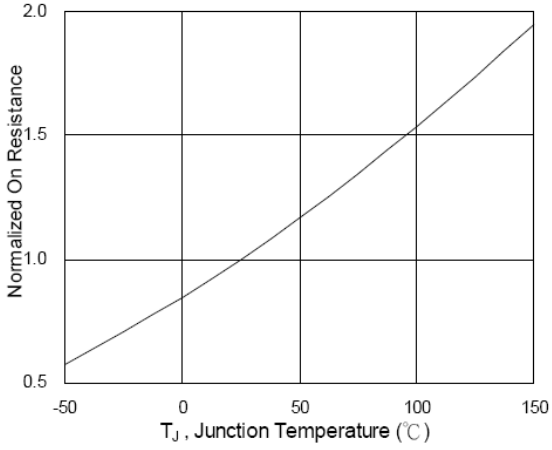


Fig.6 Normalized R_{DSON} v.s T_J

TYPICAL CHARACTERISTIC CURVE

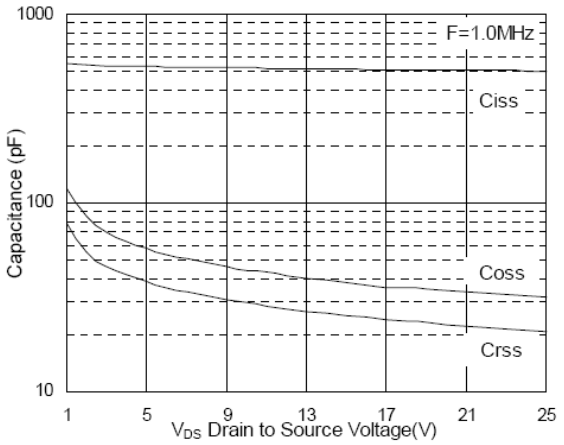


Fig.7 Capacitance

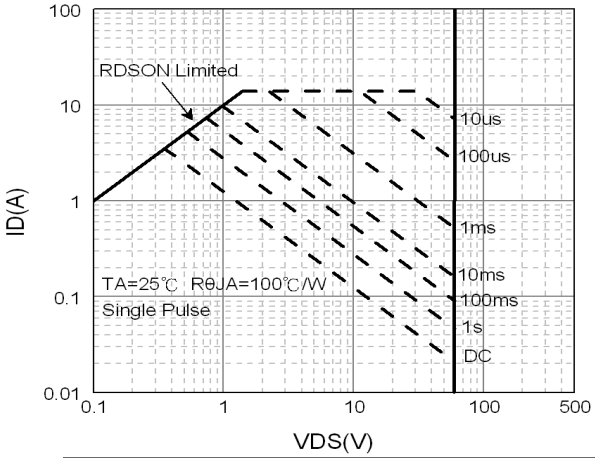


Fig.8 Safe Operating Area

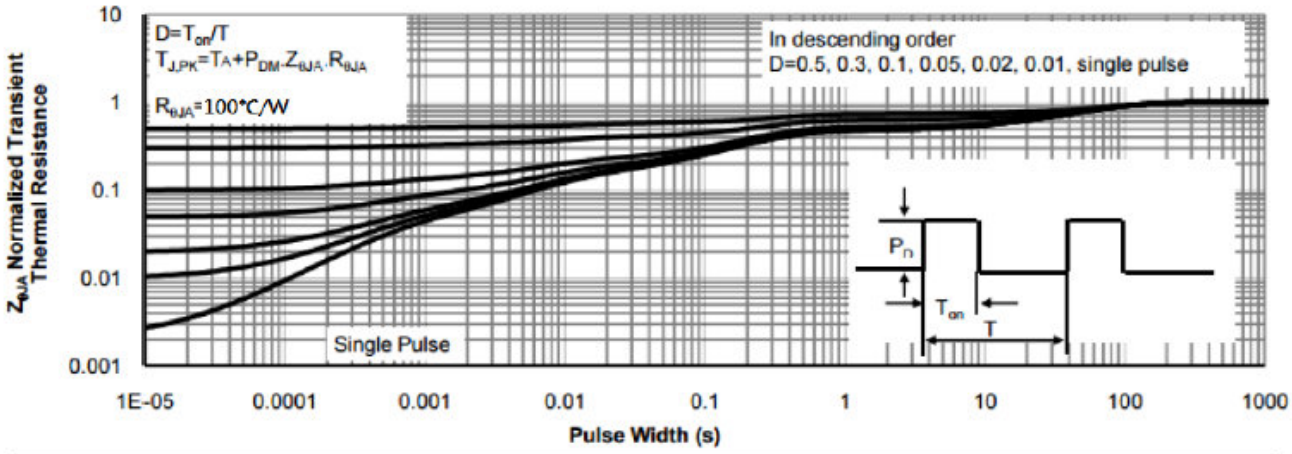


Fig.9 Normalized Maximum Transient Thermal Impedance

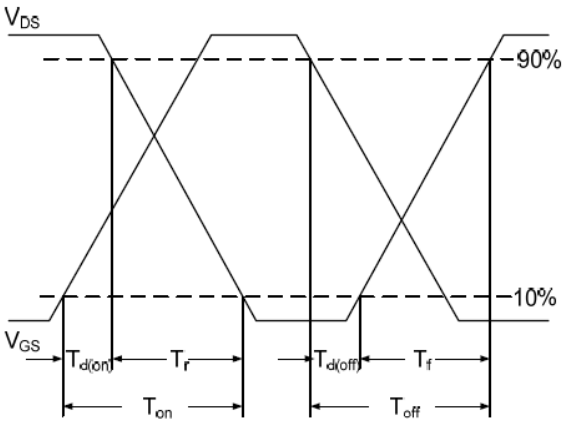


Fig.10 Switching Time Waveform

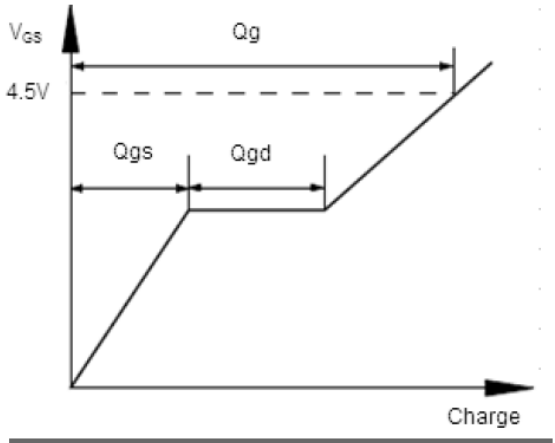


Fig.11 Gate Charge Waveform