Elektronische Bauelemente

SDT7A5N03-C

7.5A, 30V, $R_{DS(ON)}$ 22mΩ

N-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

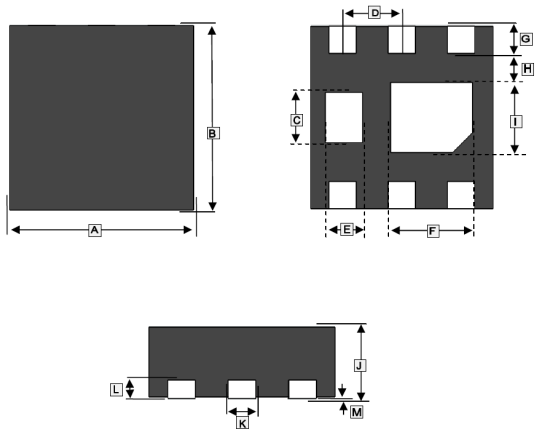
A suffix of "-C" specifies halogen and lead-free

DESCRIPTION

The SDT7A5N03-C is the highest performance trench N-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 SDT7A5N03-C meet the RoHS and Green Product requirement with full function reliability approved.

DFN2x2-6J

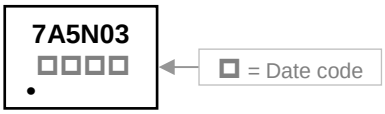


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.924	2.076	H	0.20	-
B	1.924	2.076	I	0.85	1.05
C	0.46	0.66	J	0.70	0.90
D	0.65 TYP.		K	0.20	0.40
E	0.20	0.40	L	0.203 REF	
F	0.80	1.00	M	0.00	0.05
G	0.174	0.326			

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING



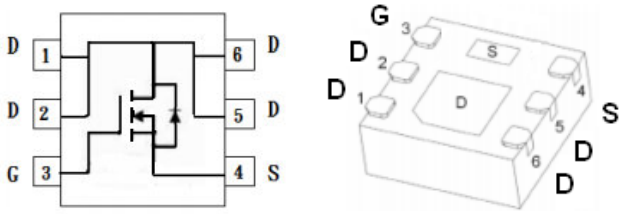
PACKAGE INFORMATION

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

ORDER INFORMATION

Part Number	Type
SDT7A5N03-C	Lead (Pb)-free and Halogen-free

Top View



ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings		Unit
			t≦10sec	Steady State	
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±20		V
Continuous Drain Current @V_{GS}=10V [1]	T_A=25℃	I_D	10	7.5	A
	T_A=70℃		8.1	5.9	
Pulsed Drain Current [3]		I_{DM}	30		A
Power Dissipation	T_A=25℃	P_D	3.12	1.66	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150		℃
Thermal Resistance Ratings					
Thermal Resistance from Junction-Ambient [1]		$R_{\theta JA}$	40	75	℃/W
Thermal Resistance from Junction-Ambient [2]			165		

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
Gate-Threshold Voltage		$V_{GS(th)}$	1	1.5	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transfer conductance		g_{fs}	-	7	-	S	V_{DS}=5V, I_D=5A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=24V, V_{GS}=0
	T_J=55℃		-	-	5		
Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	18	22	mΩ	V_{GS}=10V, I_D=6A
			-	22	27		V_{GS}=4.5V, I_D=3A
Total Gate Charge		Q_g	-	6.2	-	nC	I_D=5A V_{DS}=15V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	2.7	-		
Gate-Drain Charge		Q_{gd}	-	2.2	-		
Turn-on Delay Time		$T_{d(on)}$	-	2.2	-	nS	V_{DS}=15V V_{GS}=10V I_D=5A R_G=3.3Ω
Rise Time		T_r	-	7.6	-		
Turn-off Delay Time		$T_{d(off)}$	-	20	-		
Fall Time		T_f	-	4.8	-		
Input Capacitance		C_{iss}	-	602	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	76	-		
Reverse Transfer Capacitance		C_{rss}	-	57	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	7.5	A	
Pulsed Source Current [3]		I_{SM}	-	-	30		
Forward on Voltage [4]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0
Reverse Recovery Time		T_{rr}	-	17.2	-	nS	I_F=5A, dI/dt=100A/μs T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	0.98	-	nC	

Notes:
1. Surface Mounted on 1”x1” FR-4 Board with 2oz copper.
2. When mounted on minimum pad of 2oz. copper.
3. Pulse width limited by maximum junction temperature.
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

TYPICAL CHARACTERISTIC CURVE

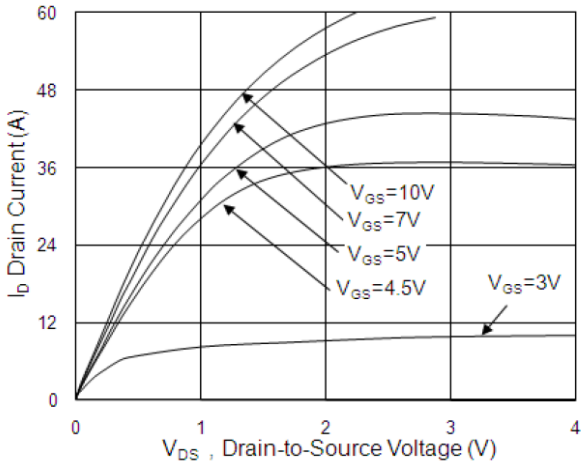


Fig.1 Typical Output Characteristics

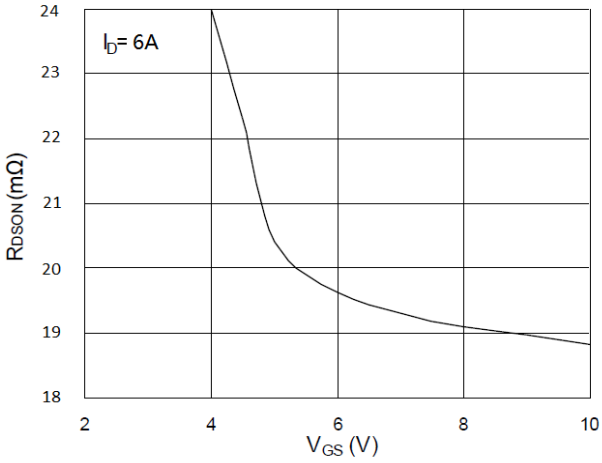


Fig.2 On-Resistance vs. Gate-Source

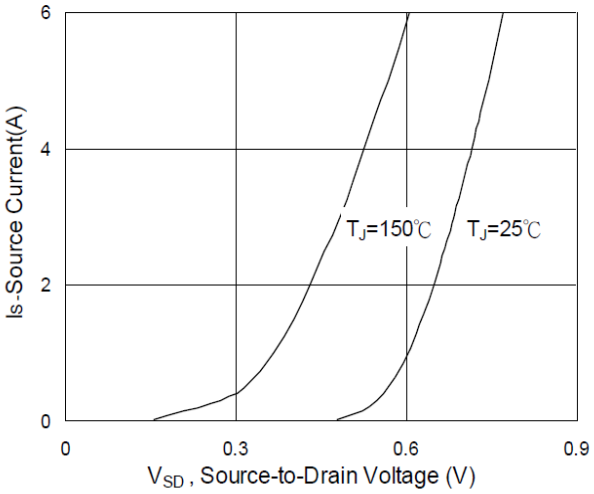


Fig.3 Forward Characteristics Of Reverse

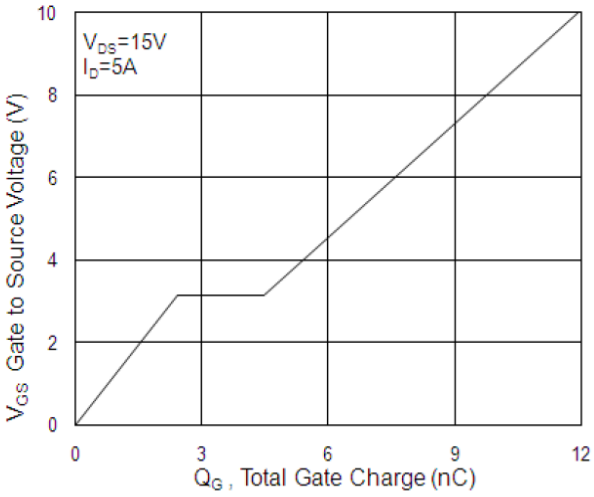


Fig.4 Gate-Charge Characteristics

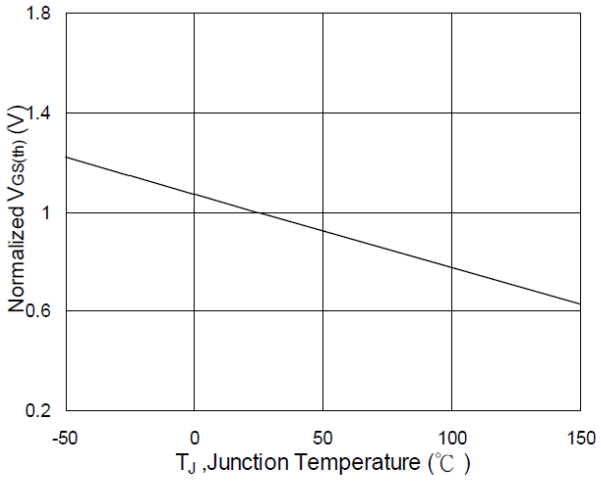


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

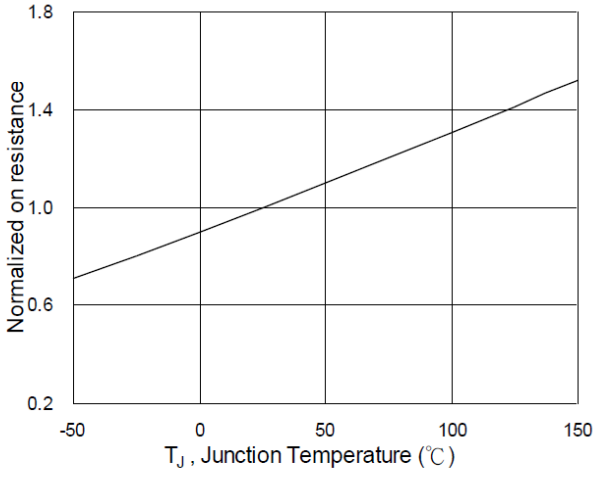


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTIC CURVES

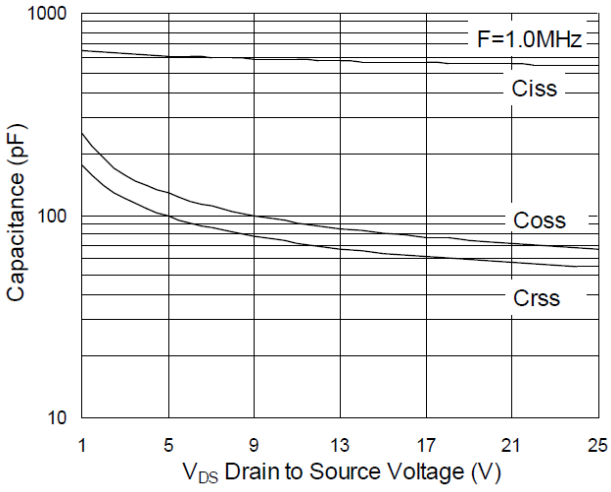


Fig.7 Capacitance

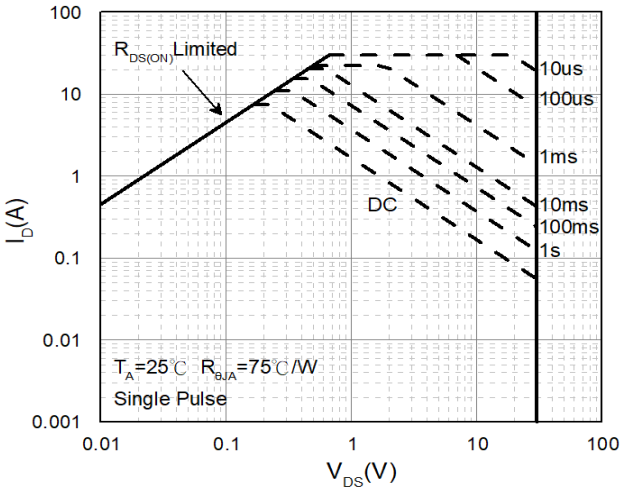


Fig.8 Safe Operating Area

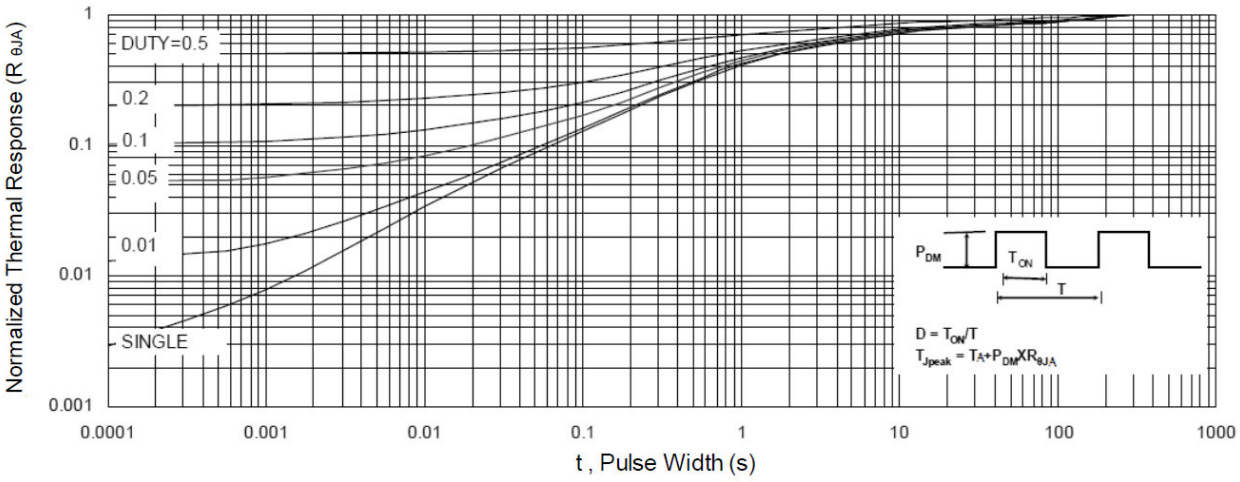


Fig.9 Normalized Maximum Transient Thermal Impedance

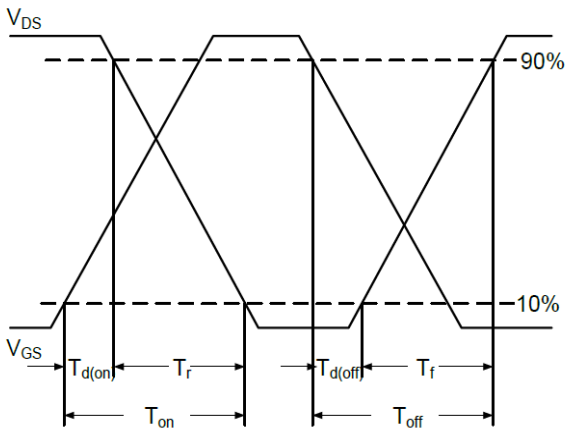


Fig.10 Switching Time Waveform

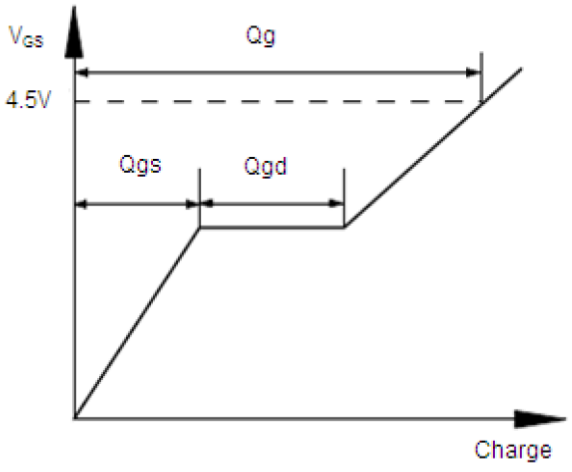
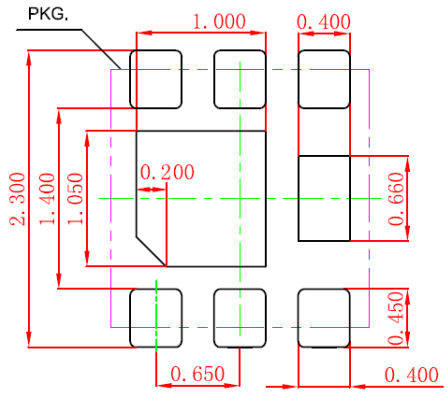


Fig.11 Gate Charge Waveform

TYPICAL CHARACTERISTIC CURVES



*Dimensions in millimeters

Fig.12 Mounting Pad Layout