

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

DESCRIPTION

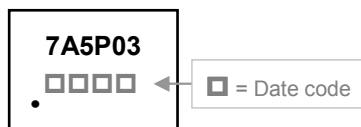
The SDT7A5P03-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SDT7A5P03-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

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

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
DFN2x2-6J	3K	7 inch

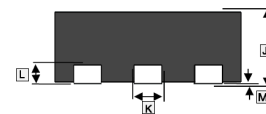
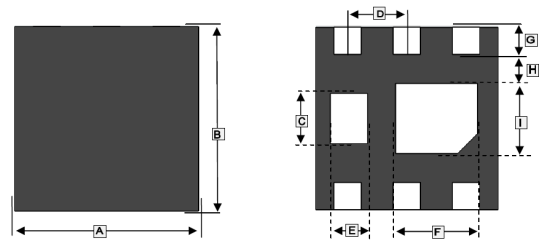
ORDER INFORMATION

Part Number	Type
SDT7A5P03-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

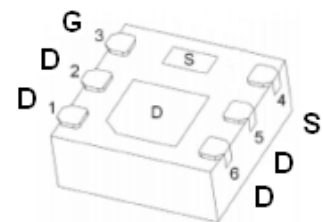
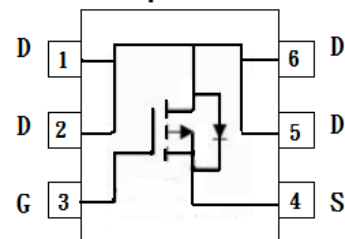
Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ $V_{GS} = -10V$ ¹	I_D	$T_A = 25^\circ C$	A
		$T_A = 70^\circ C$	
Pulsed Drain Current ³	I_{DM}	-30	A
Power Dissipation	P_D	2	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Ratings			
Thermal Resistance from Junction-Ambient ¹	$R_{\theta JA}$	62.5	$^\circ C/W$
Thermal Resistance from Junction-Ambient ²		165	

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			

Top View



ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ 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	-	-2.5	V	V _{DS} =V _{GS} , I _D = -250μA
Forward Transfer conductance		g _{fs}	-	17	-	S	V _{DS} = -5V, I _D = -6A
Gate-Source Leakage Current		I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
Drain-Source Leakage Current	T _J =25°C	I _{DSS}	-	-	-1	μA	V _{DS} = -30V, V _{GS} =0
	T _J =55°C		-	-	-5		
Drain-Source On-Resistance ⁴		R _{DS(ON)}	-	-	21	mΩ	V _{GS} = -10V, I _D = -6A
			-	-	31		V _{GS} = -4.5V, I _D = -4A
Total Gate Charge		Q _g	-	12.6	-	nC	I _D = -6A V _{DS} = -15V V _{GS} = -4.5V
Gate-Source Charge		Q _{gs}	-	4.8	-		
Gate-Drain Charge		Q _{gd}	-	4.8	-		
Turn-on Delay Time		T _{d(on)}	-	4.6	-	nS	V _{DS} = -15V V _{GS} = -10V I _D = -6A R _G =3.3Ω
Rise Time		T _r	-	14.8	-		
Turn-off Delay Time		T _{d(off)}	-	41	-		
Fall Time		T _f	-	19.6	-		
Input Capacitance		C _{iss}	-	1345	-	pF	V _{GS} =0 V _{DS} = -15V f=1MHz
Output Capacitance		C _{oss}	-	194	-		
Reverse Transfer Capacitance		C _{rss}	-	158	-		
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}	-	16.3	-	nS	I _F = -6A, dI/dt=100A/μs
Reverse Recovery Charge		Q _{rr}	-	5.9	-	nC	T _J =25°C

Notes:

1. Surface Mounted on 2"x2" FR4 Board with 2OZ copper.
2. When mounted on minimum pad of 2 oz. copper.
3. Pulse width limited by maximum junction temperature, Pulse Width $\leq 10\mu\text{s}$, Duty Cycles $\leq 1\%$.
4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycles $\leq 2\%$.

TYPICAL CHARACTERISTIC CURVE

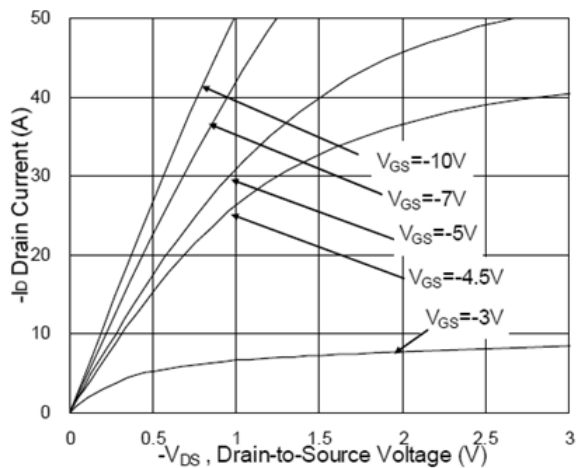


Fig.1 Typical Output Characteristics

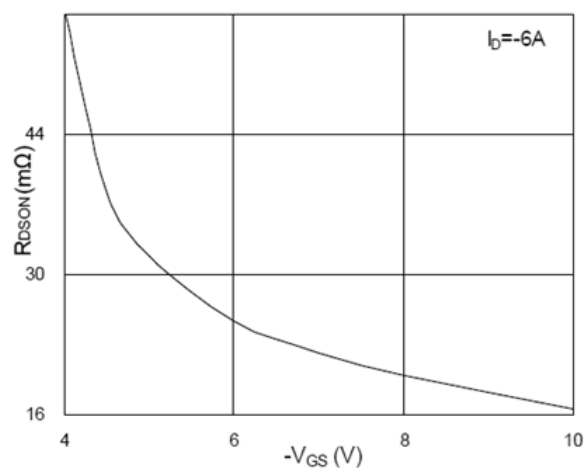


Fig.2 On-Resistance v.s Gate-Source

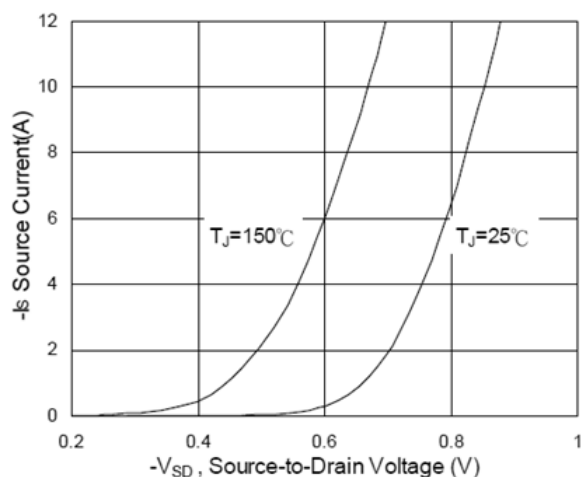


Fig.3 Forward Characteristics of Reverse

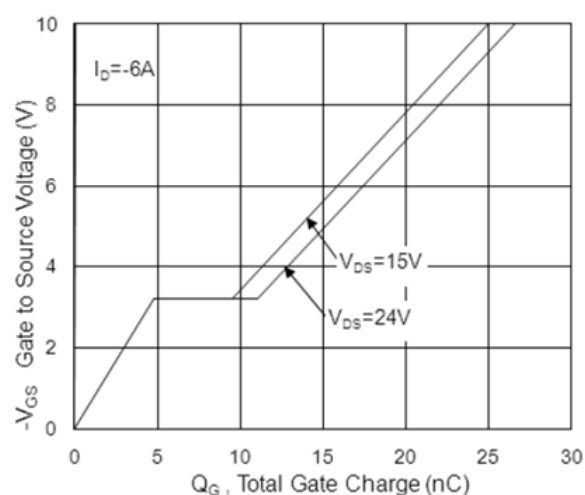


Fig.4 Gate-Charge Characteristics

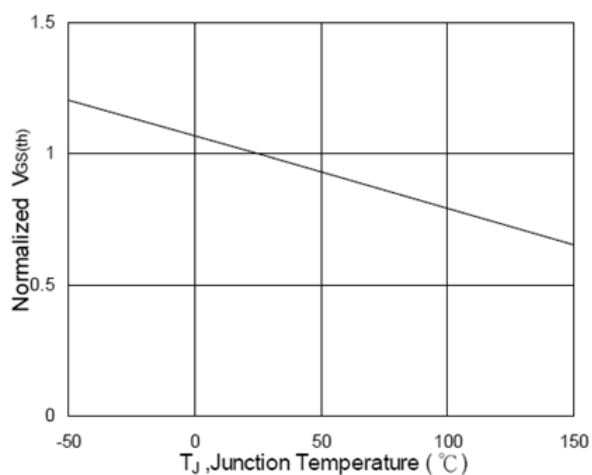


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

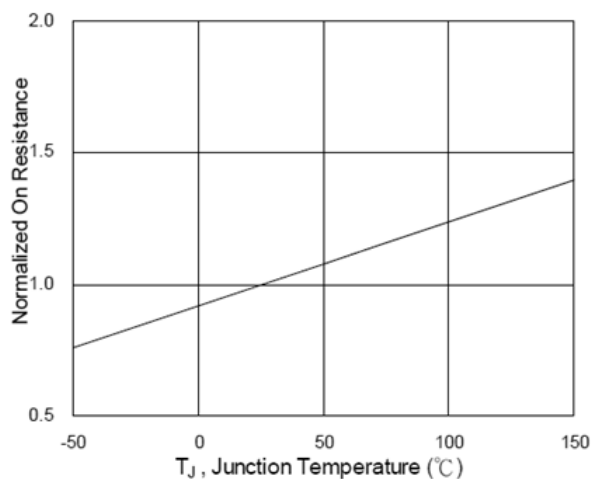


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

TYPICAL CHARACTERISTIC CURVES

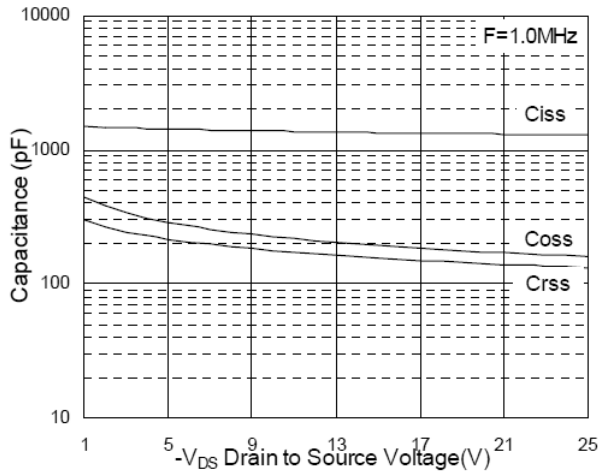


Fig.7 Capacitance

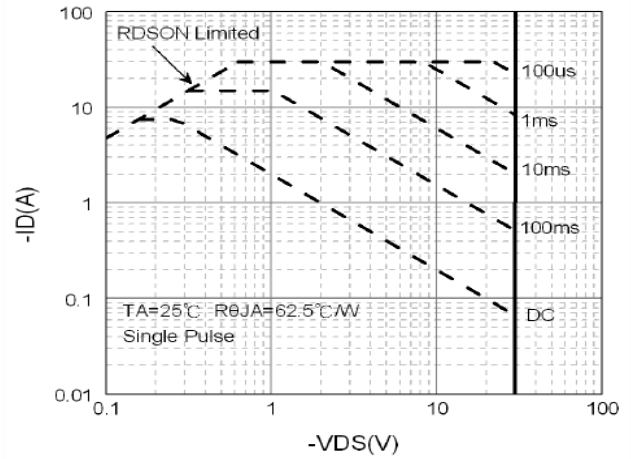


Fig.8 Safe Operating Area

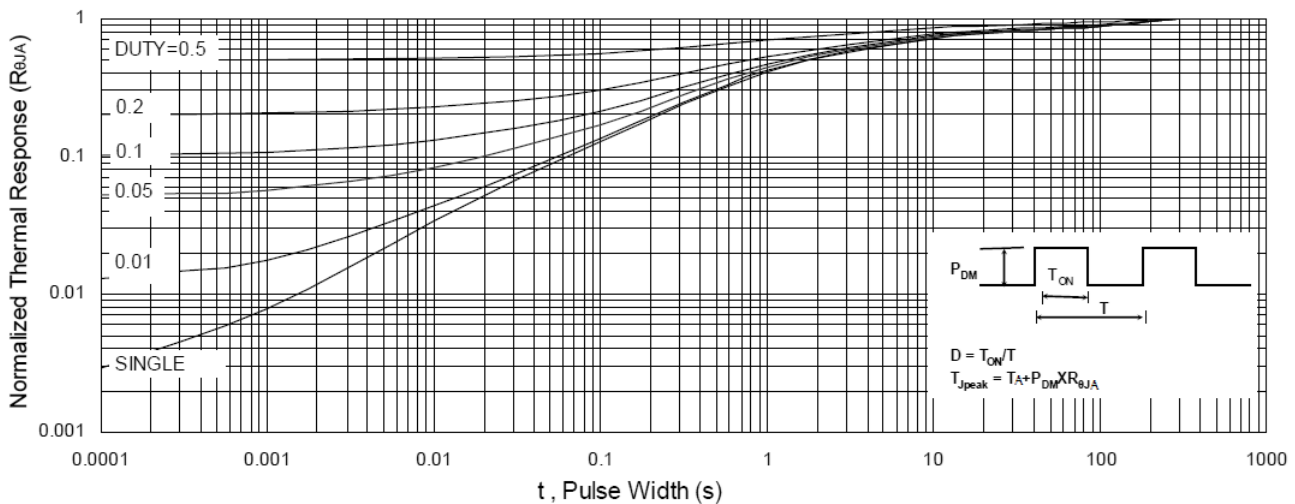


Fig.9 Normalized Maximum Transient Thermal Impedance

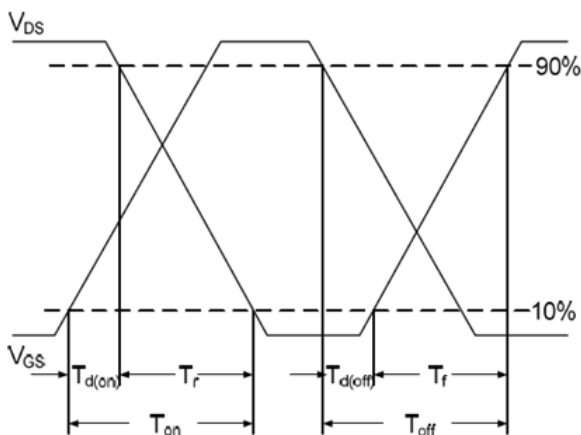


Fig.10 Switching Time Waveform

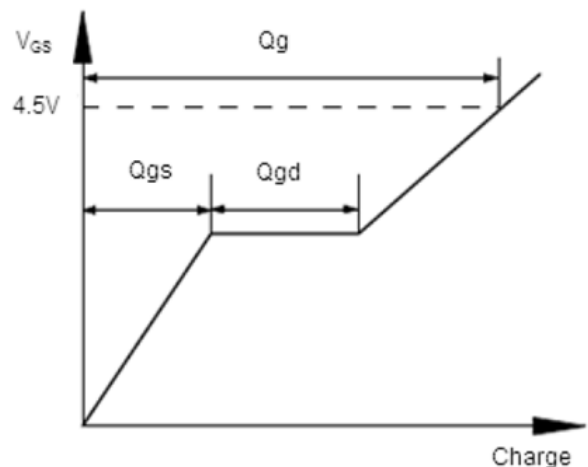


Fig.11 Gate Charge Waveform