Elektronische Bauelemente

SDT9A5P02

-9.5A, -20V, $R_{DS(ON)}$ 24mΩ

P-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

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

DESCRIPTION

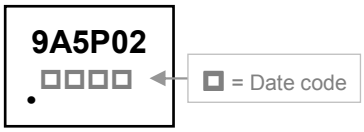
The SDT9A5P02 is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications.

The SDT9A5P02 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

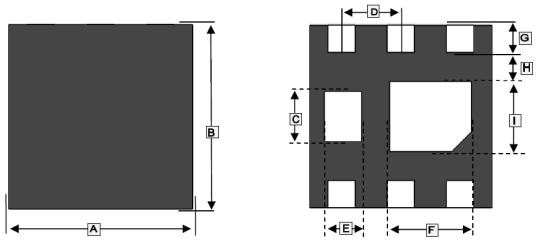
MARKING

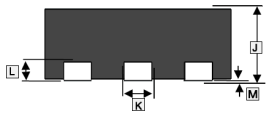


PACKAGE INFORMATION

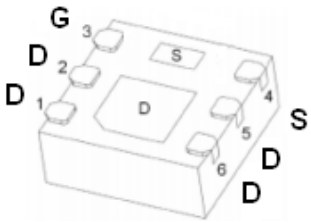
Package	MPQ	Leader Size
DFN2×2-6J	3K	7 inch

DFN2x2-6J

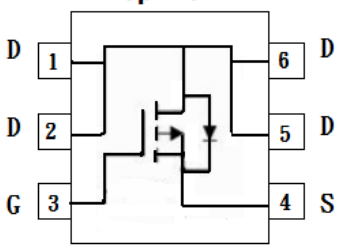




REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.924	2.076	H	0.20	-
B	1.924	2.076	I	0.85	1.05
C	0.46	0.66	J	0.70	0.90
D	0.65 TYP.		K	0.20	0.40
E	0.20	0.40	L	0.203REF	
F	0.80	1.00	M	0.00	0.05
G	0.174	0.326			



Top View



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current @V_{GS}= -4.5V [1]	T_A=25°C	I_D	-9.5	A
	T_A=70°C		-7.6	
Pulsed Drain Current [3]		I_{DM}	-38	A
Power Dissipation		P_D	2.4	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 , 52	°C / W
			Steady State , 125	
Thermal Resistance from Junction to Ambient [2]			165	

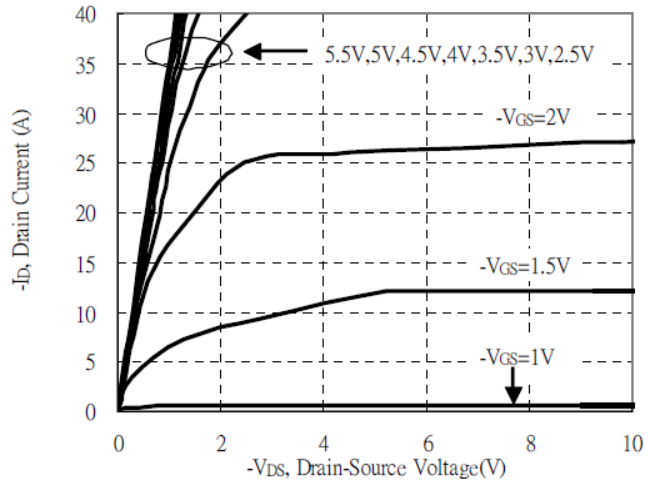
ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	-20	-	-	V	V_{GS}=0, I_D= -250μA
Gate-Threshold Voltage	$V_{GS(th)}$	-0.4	-	-0.8	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Transfer conductance	g_{fs}	-	11	-	S	V_{DS}= -10V, I_D= -8A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{DS}=0,V_{GS}= ±8V
Drain-Source Leakage Current	I_{DSS}	-	-	-1	μA	V_{DS}= -16V, V_{GS}=0,T_J=25°C
		-	-	-25		V_{DS}= -16V, V_{GS}=0, T_J=125°C
Drain-Source On-Resistance [4]	$R_{DS(ON)}$	-	-	24	mΩ	V_{GS}= -4.5V, I_D= -9.5A
		-	-	40		V_{GS}= -2.5V, I_D= -6A
		-	-	50		V_{GS}= -1.8V, I_D= -2A
Total Gate Charge	Q_g	-	28	-	nC	V_{DS}= -16V V_{GS}= -4.5V I_D= -9.5A
Gate-Source Charge	Q_{gs}	-	6.6	-		
Gate-Drain Charge	Q_{gd}	-	11	-		
Turn-On Delay Time	$T_{d(on)}$	-	16	-	nS	V_{DS}= -10V V_{GS}= -4.5V I_D= -2A R_G=3.3Ω
Rise Time	T_r	-	48	-		
Turn-Off Delay Time	$T_{d(off)}$	-	80	-		
Fall Time	T_f	-	36	-		
Input Capacitance	C_{iss}	-	2754	-	pF	V_{DS}= -10V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	264	-		
Reverse Transfer Capacitance	C_{rss}	-	223	-		
Source-Drain Diode						
Continuous Source Current [1]	I_S	-	-	-2.5	A	
Pulsed Source Current [3]	I_{SM}	-	-	-10	A	
Forward On Voltage [4]	V_{SD}	-	-	-1.2	V	I_S= -2.5A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	-	45	-	nS	I_F= -9.5A , dI/dt=100A/μs , T_J=25°C
Reverse Recovery Charge	Q_{rr}	-	60	-	nC	

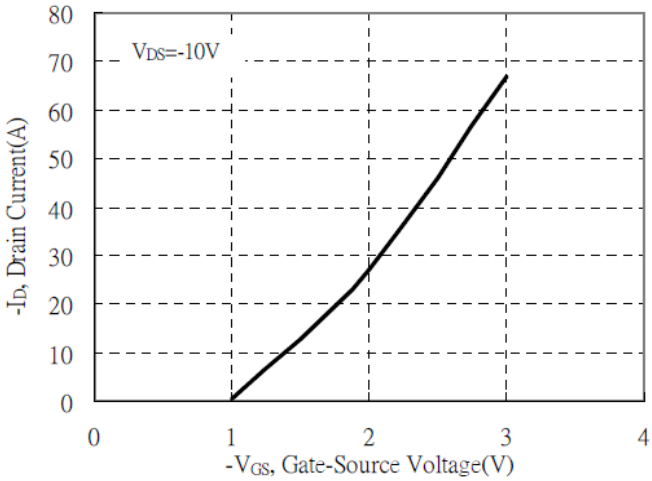
Notes:
1. Surface Mounted on 1" x 1" FR4 Board with 2OZ copper.
2. When mounted on minimum pad of 2 oz. copper.
3. Pulse width limited by maximum junction temperature.
4. Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%.

TYPICAL CHARACTERISTIC CURVE

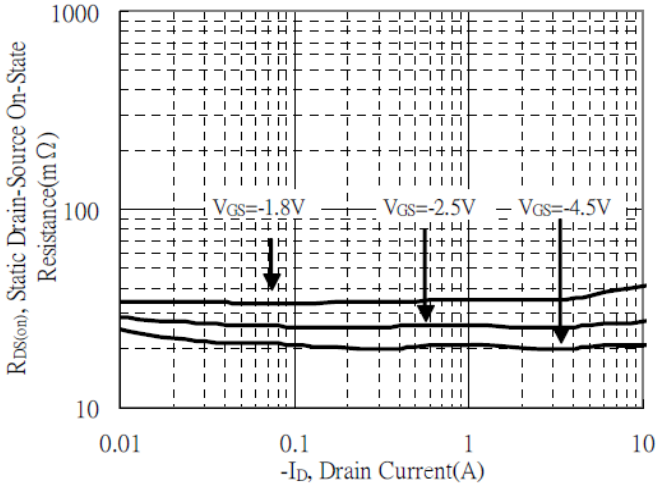
Typical Output Characteristics



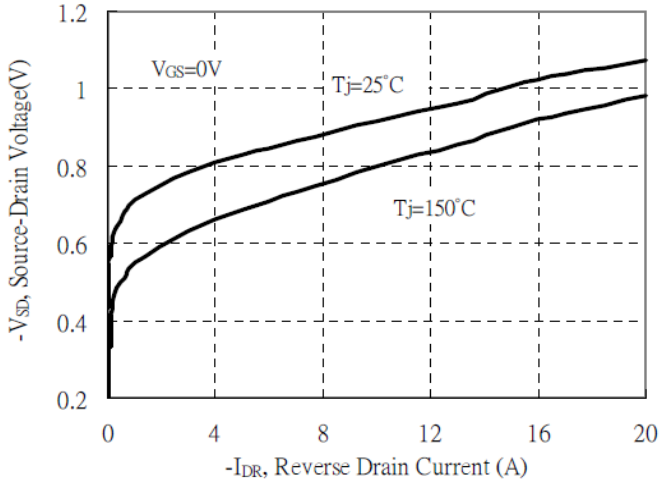
Typical Transfer Characteristics



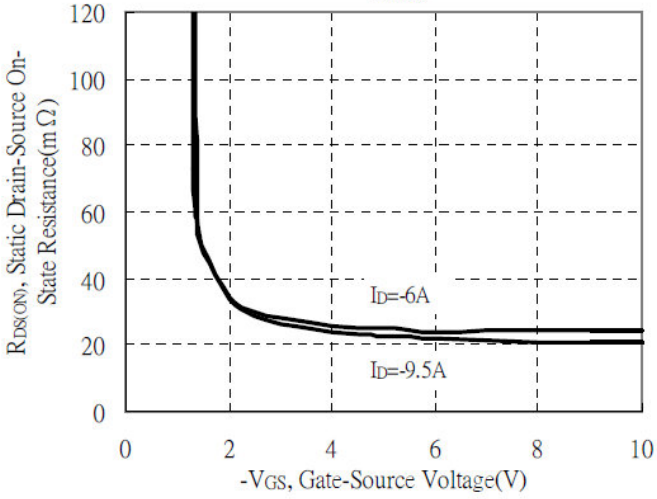
Static Drain-Source On-State resistance vs Drain Current



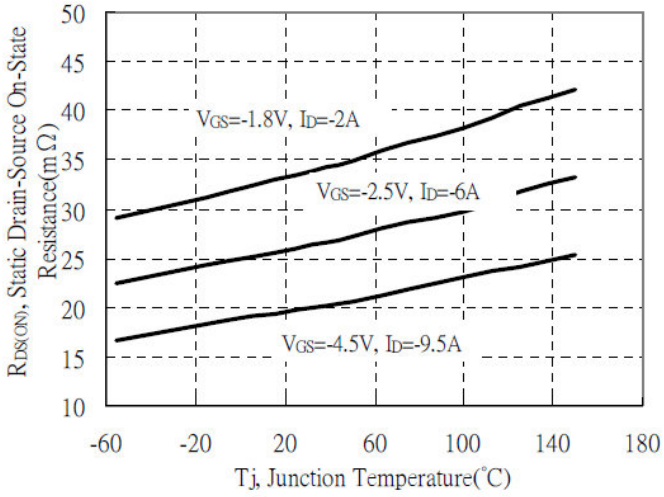
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

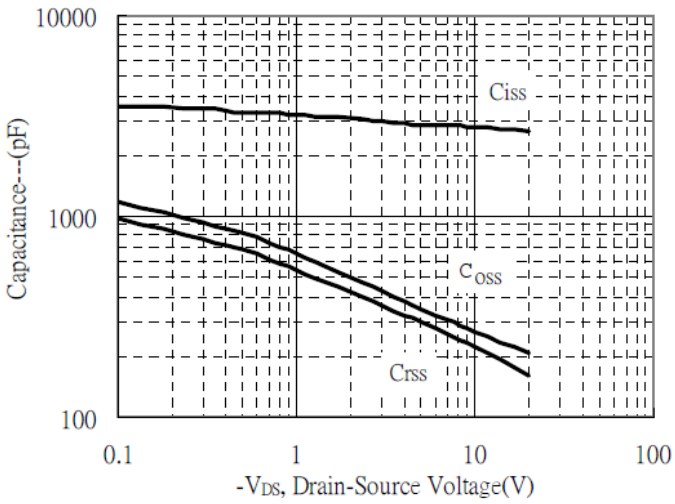


Drain-Source On-State Resistance vs Junction Tempearture

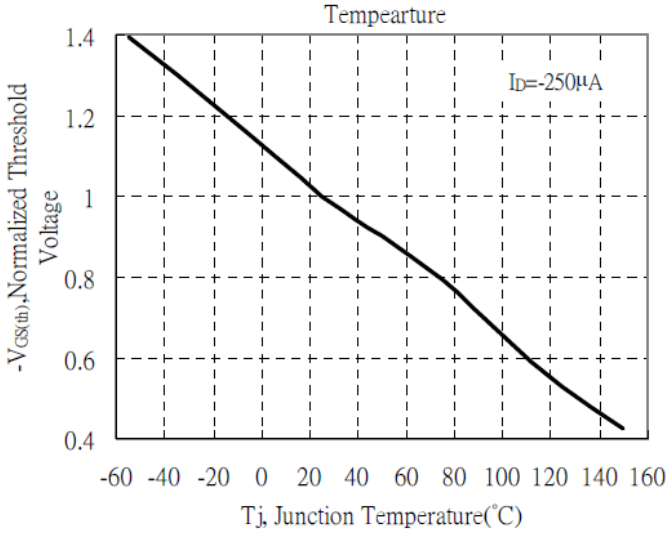


TYPICAL CHARACTERISTIC CURVE

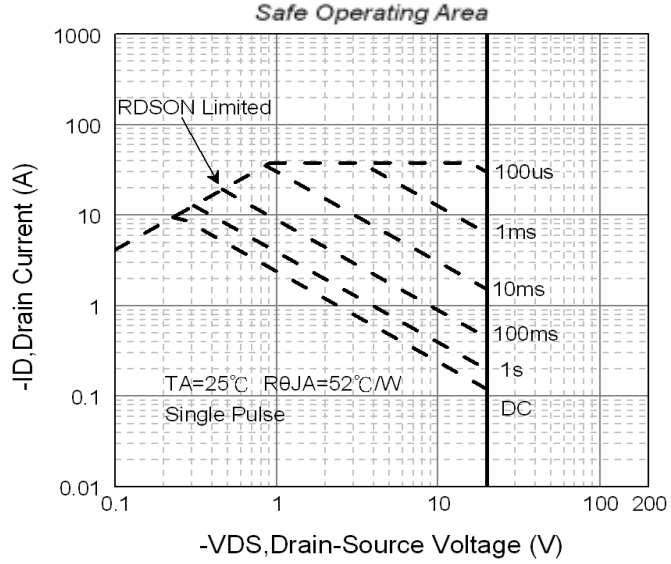
Capacitance vs Drain-to-Source Voltage



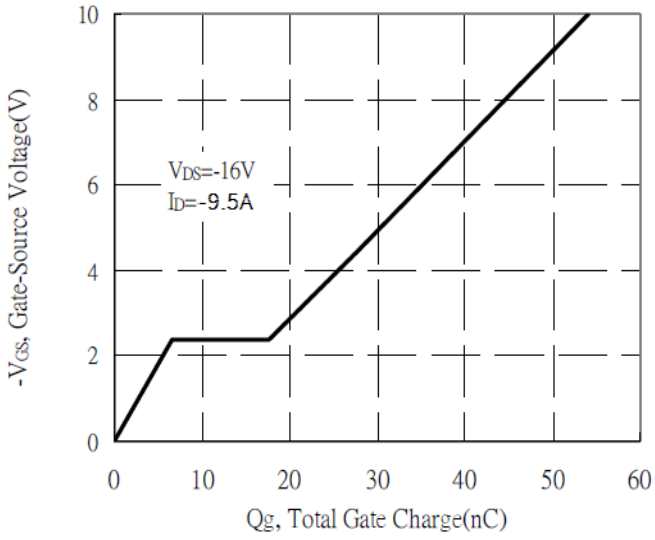
Normalized Threshold Voltage vs Junction Tempearture



Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves