

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

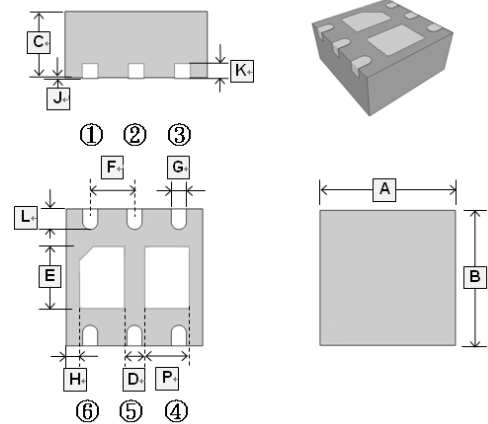
## FEATURES

- Low  $R_{DS(ON)}$  Trench Technology
- Low Thermal Impedance
- Fast Switching Speed

## APPLICATIONS

- Battery-Powered Instruments
- Portable Computing
- Mobile Phones
- GPS Units and Media Players

### DFN2x2-6L-J



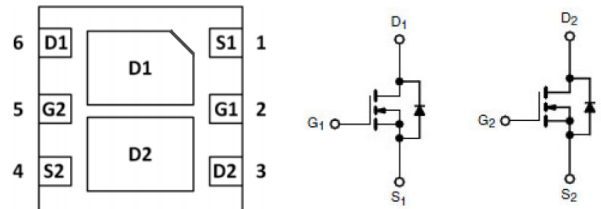
## PACKAGE INFORMATION

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

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.90	2.10	G	0.25	0.35
B	1.90	2.10	H	0.20 BSC.	
C	0.675	0.80	J	-	0.06
D	0.25	0.35	K	0.15	0.25
E	0.75	1.10	L	0.20	0.38
F	0.65 TYP.		P	0.52	0.72

## ORDER INFORMATION

Part Number	Type
SDT3N03-C	Lead (Pb)-free and Halogen-free



## ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current @ $V_{GS}=10\text{V}$ <sup>1</sup>	$I_D$	$T_A=25^\circ\text{C}$	3.5
		$T_A=70^\circ\text{C}$	2.8
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	14	A
Power Dissipation	$P_D$	1.5	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
<b>Thermal Resistance Rating</b>			
Maximum Thermal Resistance from Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	$t \leq 5\text{sec}, 83$	$^\circ\text{C/W}$
		Steady State, 125	

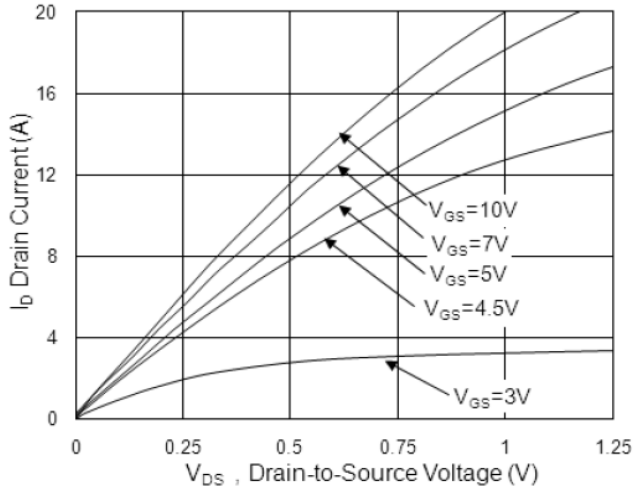
**ELECTRICAL CHARACTERISTICS** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition	
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$	
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Forward Transconductance	$g_{fs}$	-	6.7	-	S	$V_{DS}=5\text{V}, I_D=3\text{A}$	
Gate-Body Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS}=0, V_{GS}=\pm 20\text{V}$	
Zero Gate Voltage Drain Current	$I_{DSS}$	$T_J=25^\circ\text{C}$	-	-	1	$\mu\text{A}$	$V_{DS}=24\text{V}, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	5		$V_{DS}=24\text{V}, V_{GS}=0$
Drain-Source On-Resistance <sup>3</sup>	$R_{DS(ON)}$	-	45	55	m $\Omega$	$V_{GS}=10\text{V}, I_D=3\text{A}$	
		-	65	75		$V_{GS}=4.5\text{V}, I_D=2\text{A}$	
Total Gate Charge	$Q_g$	-	3.82	-	nC	$V_{DS}=15\text{V}$ $V_{GS}=4.5\text{V}$ $I_D=3\text{A}$	
Gate-Source Charge	$Q_{gs}$	-	1.15	-			
Gate-Drain Charge	$Q_{gd}$	-	1.43	-			
Turn-On Delay Time	$T_{d(ON)}$	-	0.8	-	nS	$V_{DS}=15\text{V}$ $V_{GS}=10\text{V}$ $R_G=3.3\Omega$ $I_D=3\text{A}$	
Rise Time	$T_r$	-	17	-			
Turn-Off Delay Time	$T_{d(OFF)}$	-	8.8	-			
Fall Time	$T_f$	-	17.6	-			
Input Capacitance	$C_{iss}$	-	220	-	pF	$V_{DS}=15\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$	
Output Capacitance	$C_{oss}$	-	38	-			
Reverse Transfer Capacitance	$C_{rss}$	-	32	-			
<b>Source-Drain Diode</b>							
Forward On Voltage <sup>3</sup>	$V_{SD}$	-	-	1	V	$I_S=1\text{A}, V_{GS}=0\text{V}$	
Continuous Source Current <sup>1</sup>	$I_S$	-	-	3.5	A		
Pulsed Source Current <sup>2</sup>	$I_{SM}$	-	-	14	A		
Reverse Recovery Time	$t_{rr}$	-	7.5	-	nS	$I_F=3\text{A}, di/dt=100\text{A}/\mu\text{s}$	
Reverse Recovery Charge	$Q_{rr}$	-	1.5	-	nC	$T_J=25^\circ\text{C}$	

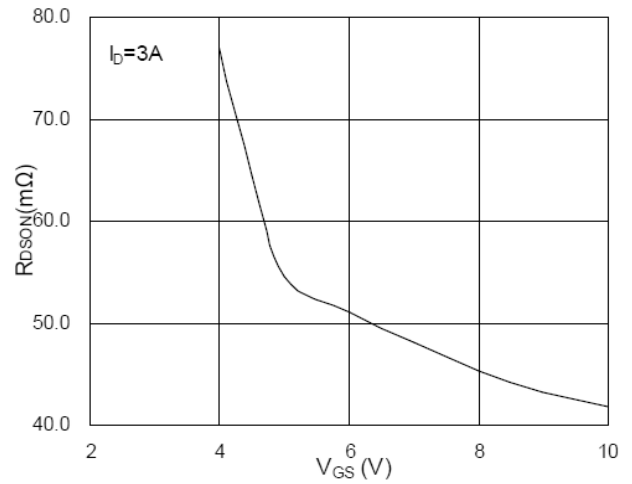
Notes:

1. The surface of the device is mounted on a 1" x 1" FR-4 board with 2oz copper.
2. Pulse width is limited by the maximum junction temperature.
3. Pulse test: Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

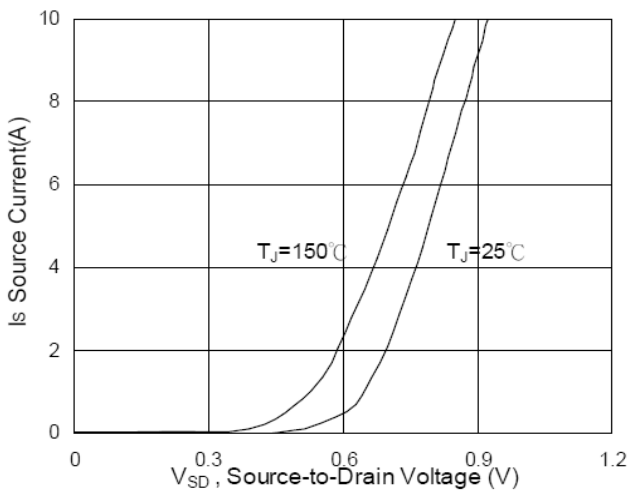
**CHARACTERISTIC CURVE**



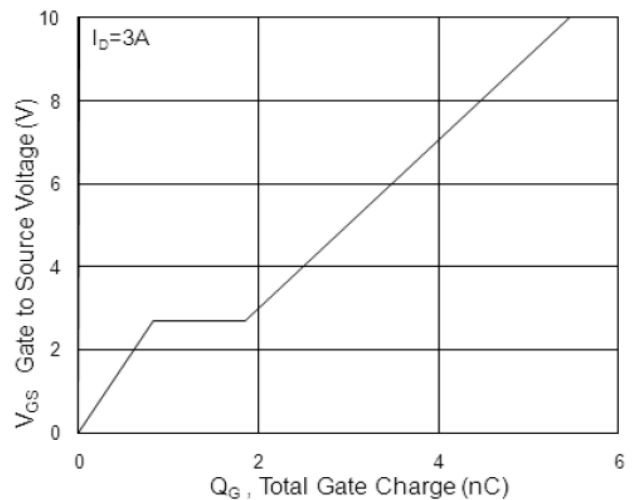
**Fig.1 Typical Output Characteristics**



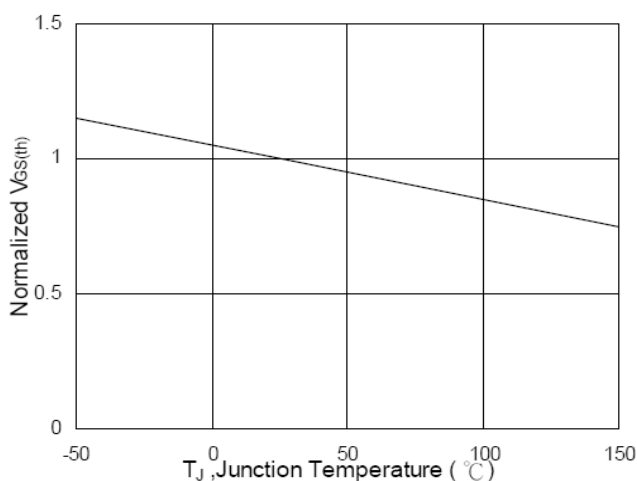
**Fig.2 On-Resistance vs. G-S Voltage**



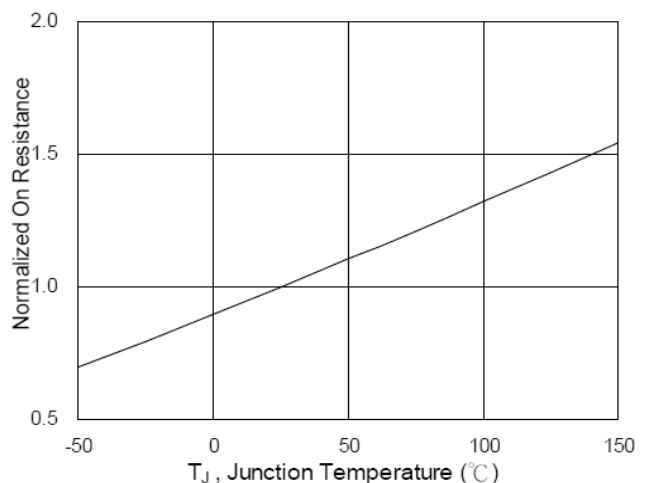
**Fig.3 Forward Characteristics of Reverse**



**Fig.4 Gate-charge Characteristics**

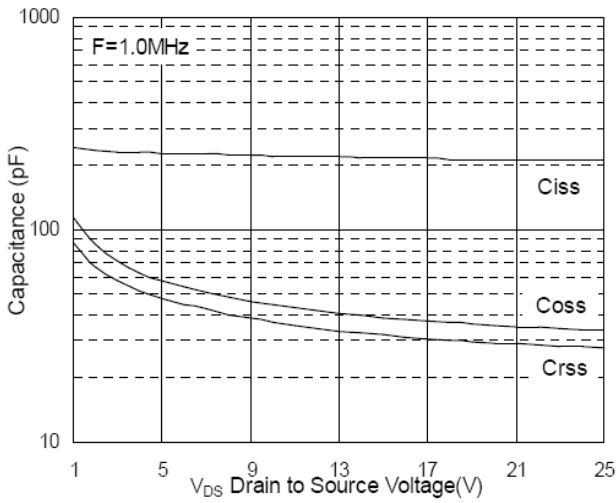


**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**

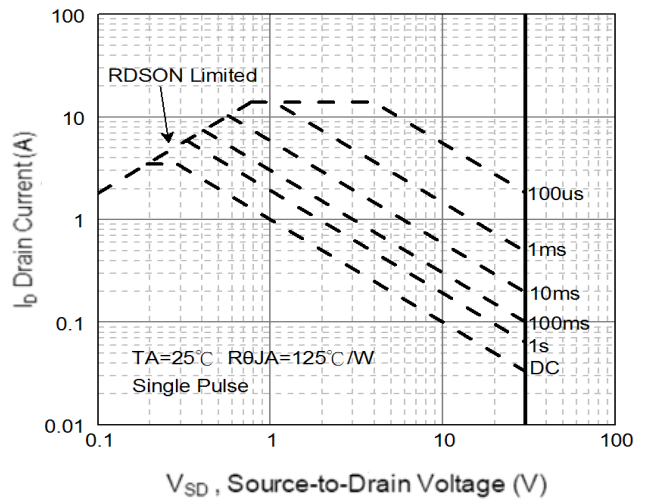


**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**

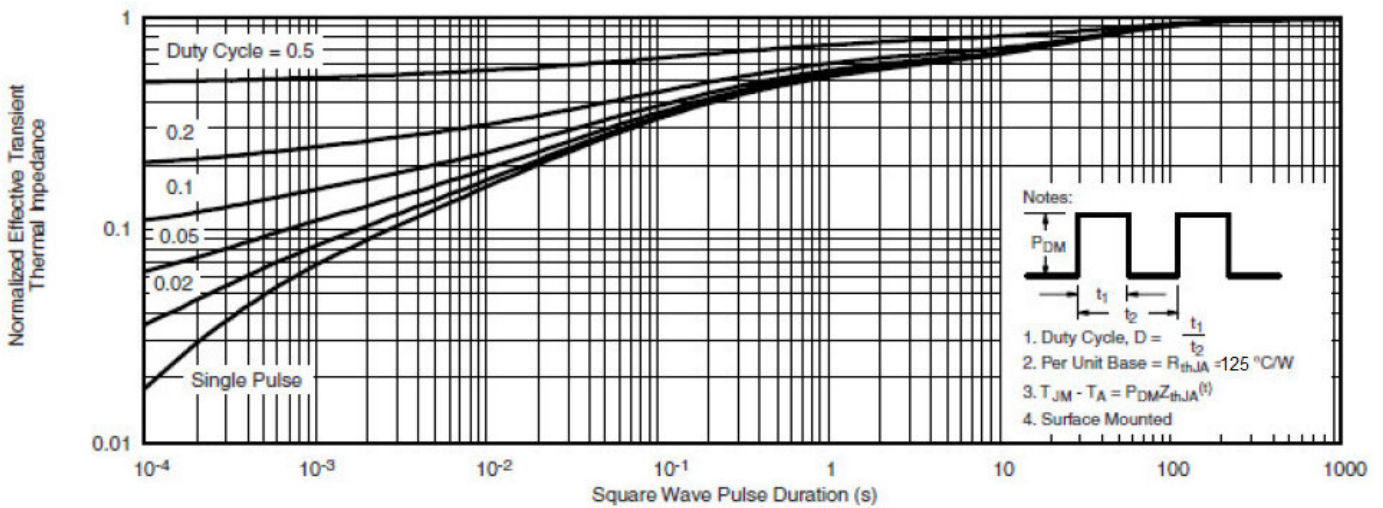
**CHARACTERISTIC CURVE**



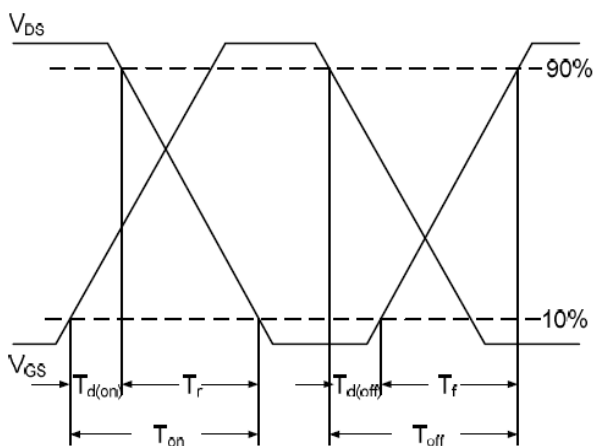
**Fig.7 Capacitance**



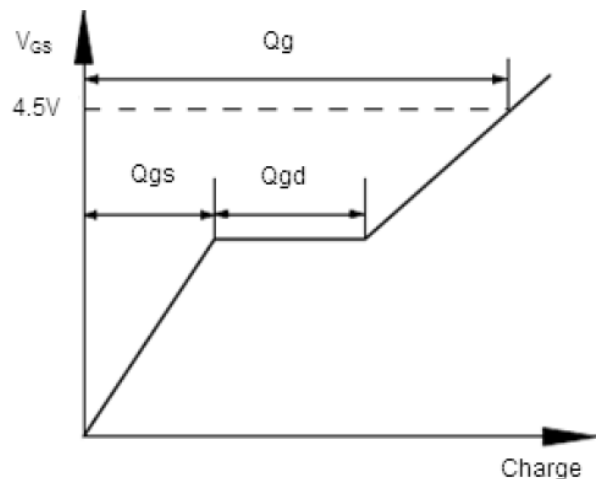
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



**Fig.10 Switching Time Waveform**



**Fig.11 Gate Charge Waveform**

### CHARACTERISTIC CURVE

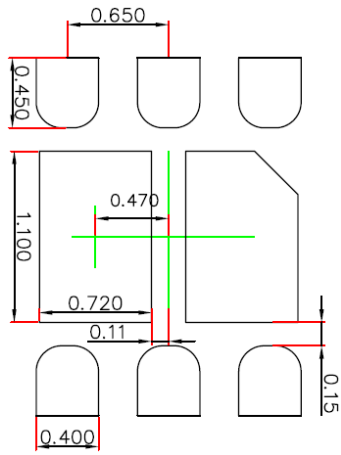


Fig.12 Mounting Pad Layout