

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

## DESCRIPTION

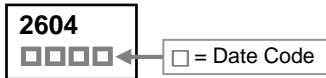
The SST2604-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent  $R_{DS(ON)}$  and gate charge for most of the synchronous buck converter applications.

The SST2604-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



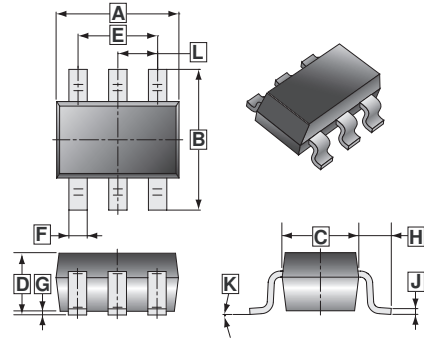
## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-26	3K	7 inch

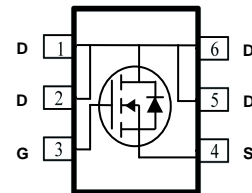
## ORDER INFORMATION

Part Number	Type
SST2604-C	Lead (Pb)-free and Halogen-free

## SOT-26



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60	REF.
C	1.40	1.80	J	0.12	REF.
D	1.30	MAX.	K	0°	10°
E	1.90	REF.	L	0.95	REF.
F	0.25	0.50			



## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings		Unit	
		$t \leq 10\text{sec}$	Steady State		
Drain-Source Voltage	$V_{DS}$	30		V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		V	
Continuous Drain Current <sup>1</sup> , @ $V_{GS}=10\text{V}$	$I_D$	$T_A=25^\circ\text{C}$	5.8	5	A
		$T_A=70^\circ\text{C}$	4.6	4	
Pulsed Drain Current <sup>3</sup>	$I_{DM}$	20		A	
Total Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	1.5	1.1	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150		$^\circ\text{C}$	
Thermal Data					
Thermal Resistance from Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	$t \leq 10\text{sec}, 85$	$^\circ\text{C/W}$		
		Steady State, 110			
Thermal Resistance from Junction-Ambient <sup>2</sup>		156			
Thermal Resistance from Junction-Case <sup>1</sup>	$R_{\theta JC}$	70			

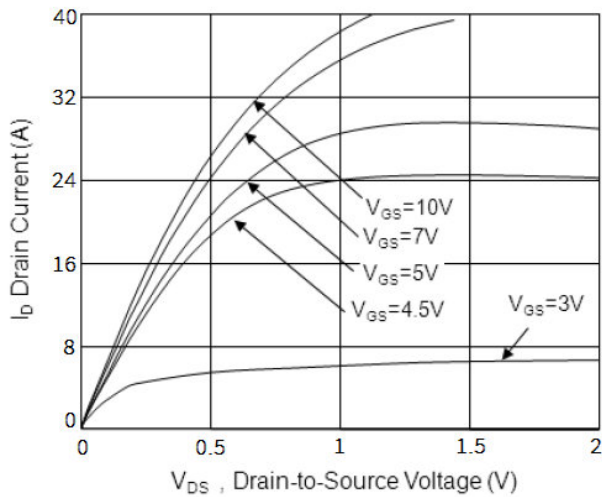
**ELECTRICAL CHARACTERISTICS** (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =250μA
Gate Threshold Voltage	V <sub>GS(th)</sub>	1	-	2.5	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA
Forward Transconductance	g <sub>fs</sub>	-	7	-	S	V <sub>DS</sub> =5V, I <sub>D</sub> =5A
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±20V
Drain-Source Leakage Current	I <sub>DSS</sub>	T <sub>J</sub> =25°C	-	1	μA	V <sub>DS</sub> =24V, V <sub>GS</sub> =0
		T <sub>J</sub> =55°C	-	5		V <sub>DS</sub> =24V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>4</sup>	R <sub>DS(ON)</sub>	-	-	25	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =5A
		-	-	30		V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A
Total Gate Charge	Q <sub>g</sub>	-	6	-	nC	I <sub>D</sub> =5A V <sub>DS</sub> =15V V <sub>GS</sub> =4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	2.5	-		
Gate-Drain Charge	Q <sub>gd</sub>	-	2.1	-		
Turn-on Delay Time	T <sub>d(on)</sub>	-	2.4	-	nS	V <sub>DD</sub> =15V I <sub>D</sub> =5A V <sub>GS</sub> =10V R <sub>G</sub> =3.3Ω
Rise Time	T <sub>r</sub>	-	7.8	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	22	-		
Fall Time	T <sub>f</sub>	-	4	-		
Input Capacitance	C <sub>iss</sub>	-	572	-	pF	V <sub>GS</sub> =0 V <sub>DS</sub> =15V f=1MHz
Output Capacitance	C <sub>oss</sub>	-	81	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	65	-		
<b>Source-Drain Diode</b>						
Continuous Source Current <sup>1</sup>	I <sub>S</sub>	-	-	5	A	
Pulsed Source Current <sup>3</sup>	I <sub>SM</sub>	-	-	20		
Forward on Voltage <sup>4</sup>	V <sub>SD</sub>	-	-	1.2	V	I <sub>S</sub> =1A, V <sub>GS</sub> =0
Reverse Recovery Time	t <sub>rr</sub>	-	19	-	nS	I <sub>F</sub> =5A, dI/dt=100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	-	1.04	-	nC	T <sub>J</sub> =25°C

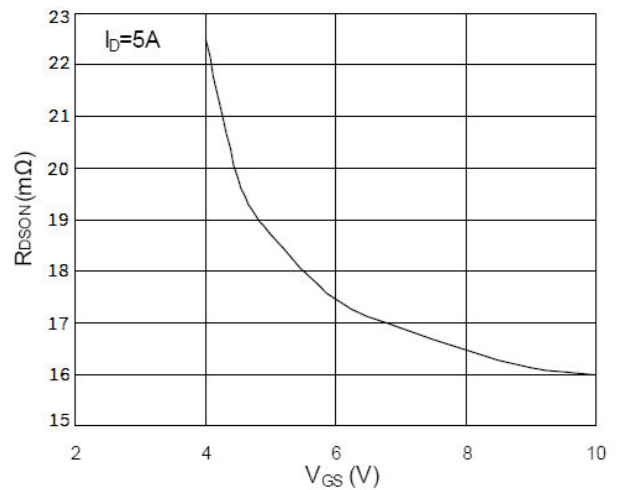
Notes:

- Surface Mounted on 1"x1" FR4 Board with 2OZ copper.
- When mounted on Min. Copper pad.
- Pulse width limited by maximum junction temperature, Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

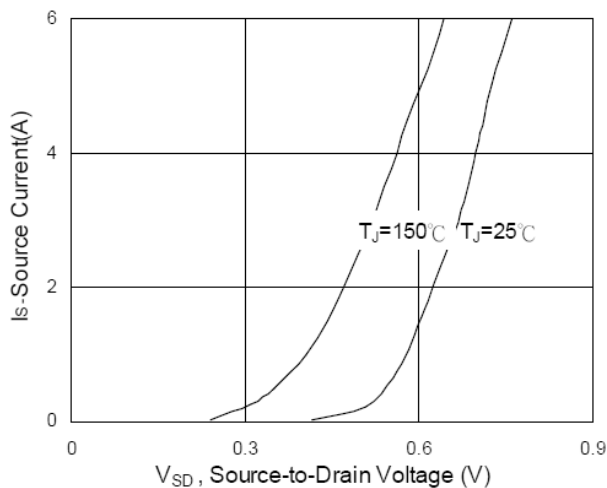
**CHARACTERISTICS CURVE**



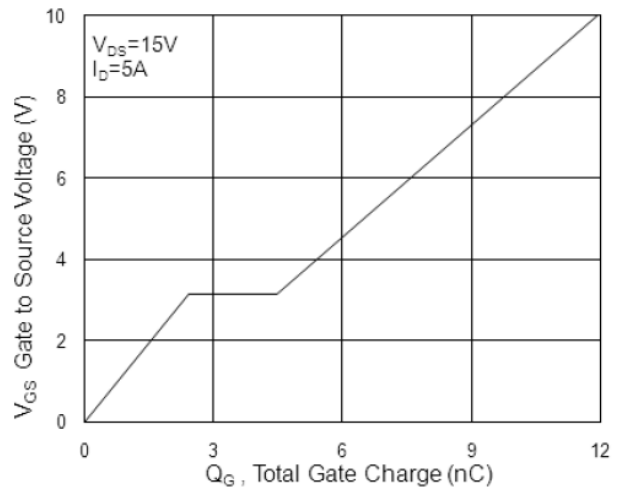
**Fig.1 Typical Output Characteristics**



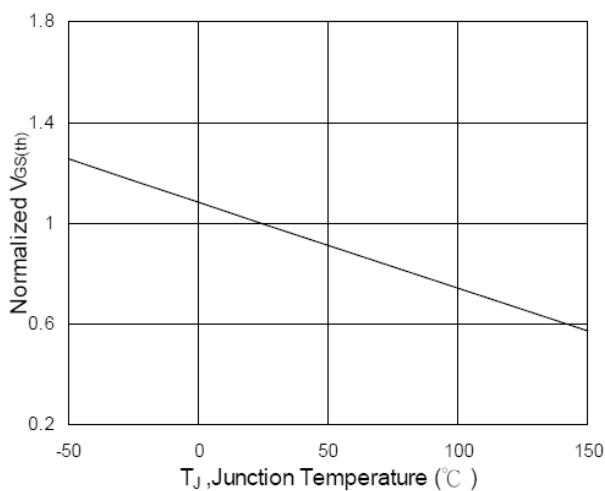
**Fig.2 On-Resistance vs. Gate-Source**



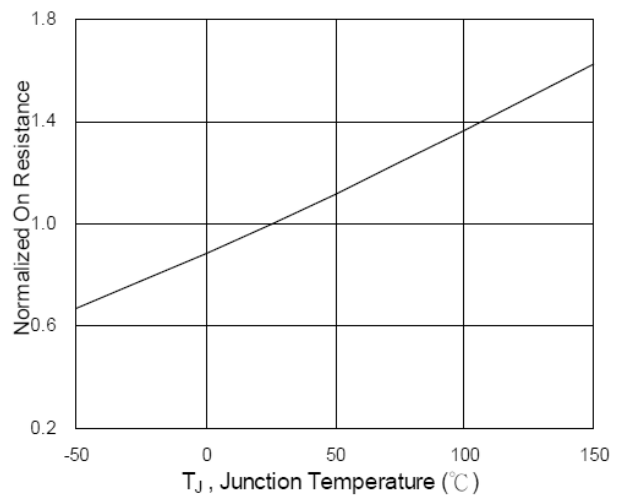
**Fig.3 Forward Characteristics Of Reverse**



**Fig.4 Gate-Charge Characteristics**

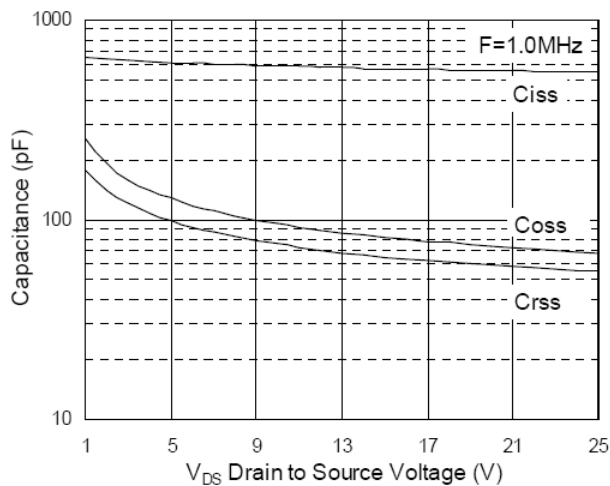


**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**

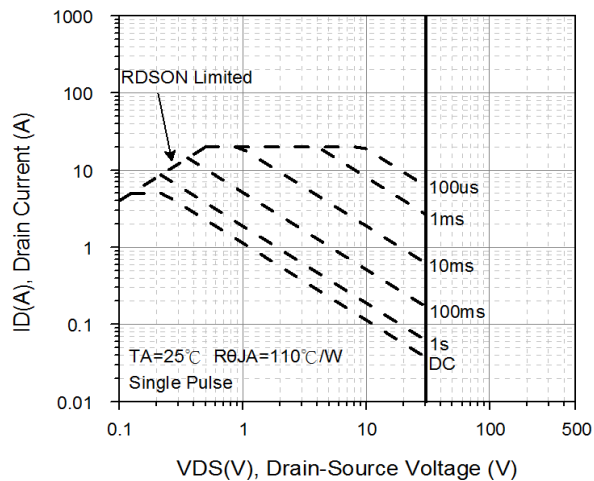


**Fig.6 Normalized  $R_{DS(ON)}$  vs.  $T_J$**

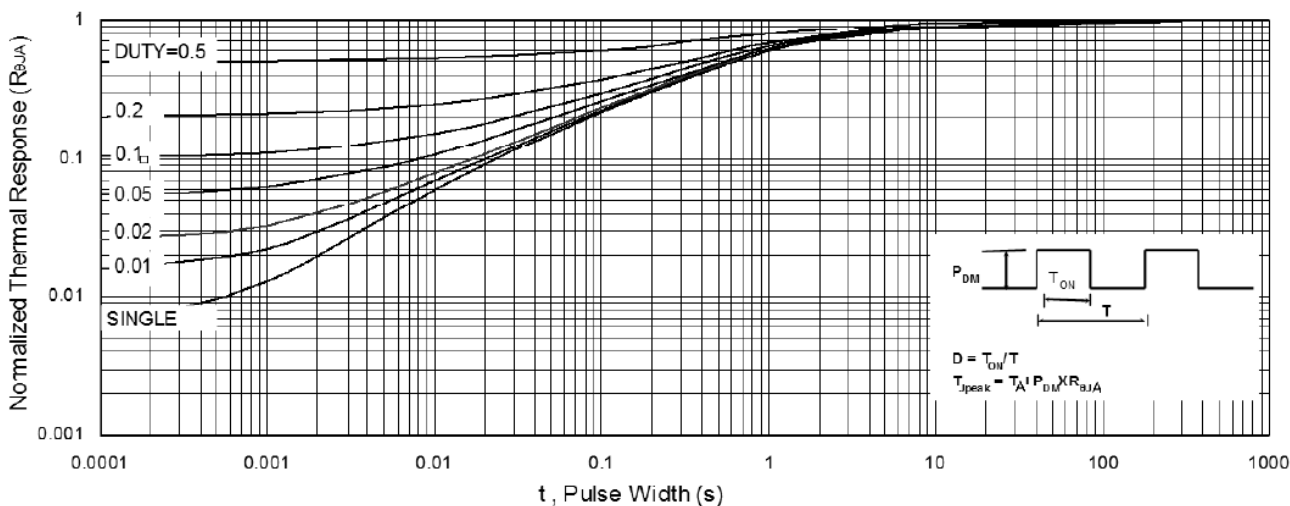
**CHARACTERISTICS CURVE**



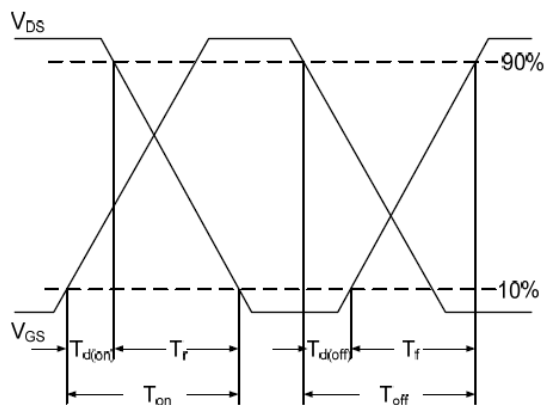
**Fig.7 Capacitance**



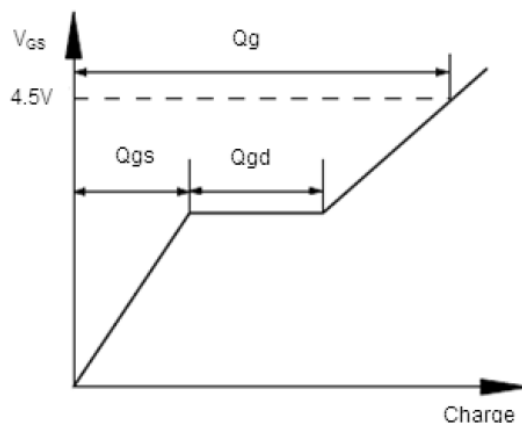
**Fig.8 Safe Operating Area**



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



**Fig.10 Switching Time Waveform**



**Fig.11 Gate Charge Waveform**