

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

FEATURES

- 20V/ -500mA
- $R_{DS(ON)} \leq 0.9\Omega @ V_{GS} = -4.5V$
- $R_{DS(ON)} \leq 1.4\Omega @ V_{GS} = -2.5V$
- $R_{DS(ON)} \leq 2.7\Omega @ V_{GS} = -1.8V$
- Reliable and Rugged
- Green Device Available
- ESD Protected: 2kV

APPLICATION

- Interfacing
- Switching

MARKING

G9

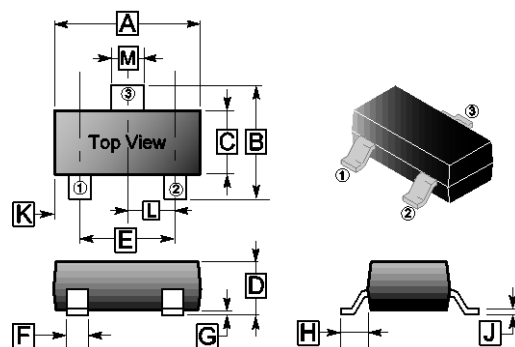
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-523	3K	7 inch

ORDER INFORMATION

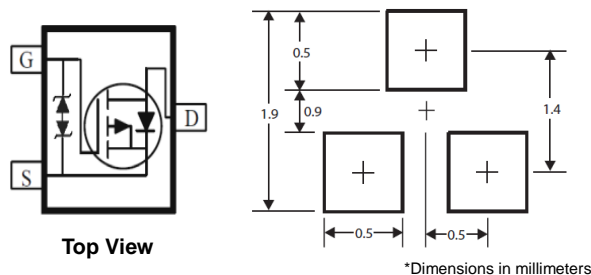
Part Number	Type
SCG2090-C	Lead (Pb)-free and Halogen-free

SOT-523



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.50	1.70	G	-	0.10
B	1.45	1.75	H	0.55 REF.	
C	0.70	0.90	J	0.08	0.20
D	0.60	0.90	K	-	
E	0.90	1.10	L	0.50 TYP.	
F	0.15	0.35	M	0.25	0.40

Mounting Pad Layout



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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current @ $V_{GS} = -4.5V$ ¹	I_D	$T_A=25^\circ\text{C}$	-0.5
		$T_A=70^\circ\text{C}$	-0.33
Pulsed Drain Current ⁴	I_{DM}	-1.5	A
Total Power Dissipation ³	P_D	300	mW
Operating Junction & Storage Temperature Range	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance from Junction-Ambient ¹	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Thermal Resistance from Junction-Ambient ²		833	

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

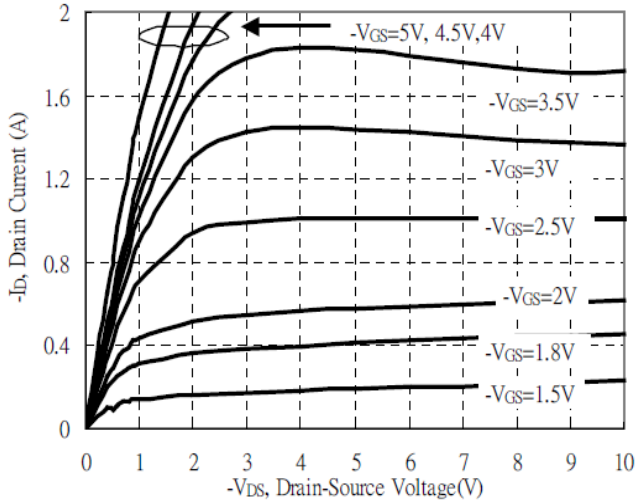
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-20	-	-	V	$V_{GS}=0, I_D=-250\mu\text{A}$	
Gate Threshold Voltage	$V_{GS(th)}$	-0.5	-	-1.2	V	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	
Gate-Body Leakage Current	I_{GSS}	-	-	± 10	μA	$V_{DS}=0, V_{GS}=\pm 12\text{V}$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	-1	μA	$V_{DS}=-20\text{V}, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	-10		$V_{DS}=-20\text{V}, V_{GS}=0$
Drain-Source On-Resistance ⁴	$R_{DS(ON)}$	-	0.6	0.9	Ω	$V_{GS}=-4.5\text{V}, I_D=-350\text{mA}$	
		-	0.8	1.4		$V_{GS}=-2.5\text{V}, I_D=-300\text{mA}$	
		-	1	2.7		$V_{GS}=-1.8\text{V}, I_D=-150\text{mA}$	
		-	5.5	8		$V_{GS}=-1.2\text{V}, I_D=-100\text{mA}$	
Total Gate Charge	Q_g	-	1.5	-	nC	$I_{DS}=-250\text{mA}$ $V_{DS}=-10\text{V}$ $V_{GS}=-4.5\text{V}$	
Gate-Source Charge	Q_{gs}	-	0.28	-			
Gate-Drain ("Miller") Change	Q_{gd}	-	0.44	-			
Turn-on Delay Time	$T_{d(on)}$	-	5	-	nS	$V_{DD}=-10\text{V}$ $I_{DS}=-200\text{mA}$ $V_{GS}=-4.5\text{V}$ $R_{GEN}=10\Omega$	
Rise Time	T_r	-	6	-			
Turn-off Delay Time	$T_{d(off)}$	-	42	-			
Fall Time	T_f	-	14	-			
Input Capacitance	C_{iss}	-	59	-	pF	$V_{DS}=-10\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	21	-			
Reverse Transfer Capacitance	C_{rss}	-	15	-			
Source-Drain Diode							
Continuous Source Current ¹	I_S	-	-	-0.5	A		
Pulsed Source Current ⁴	I_{SM}	-	-	-1.5			
Diode Forward Voltage ³	V_{SD}	-	-	-1.2	V	$I_S=-150\text{mA}, V_{GS}=0\text{V}$	

Notes:

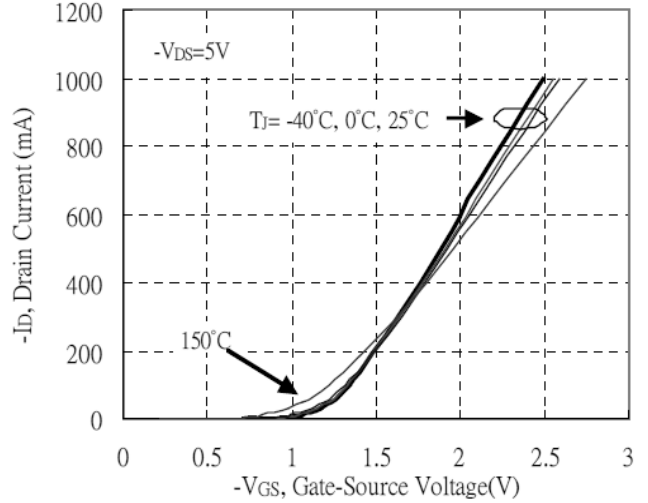
1. Surface mounted on a 1 inch² FR-4 board with 2oz copper.
2. When mounted on Min. copper pad.
3. The power dissipation is limited by 150°C junction temperature.
4. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

CHARACTERISTICS CURVES

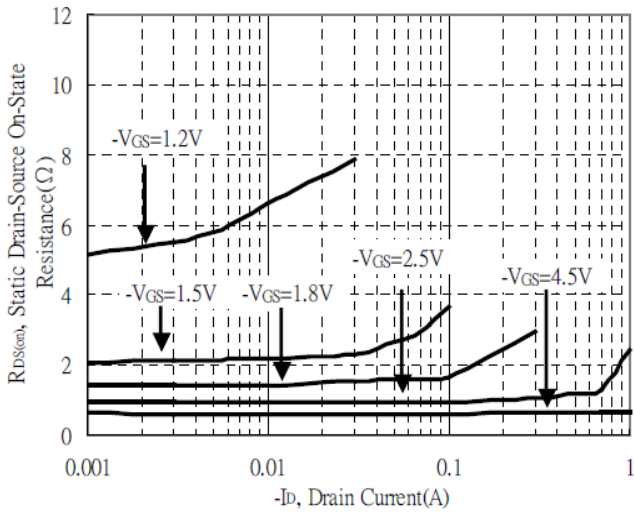
Typical Output Characteristics



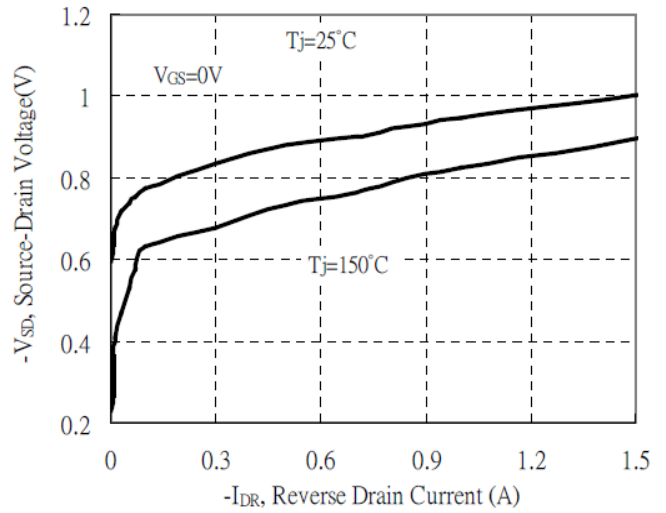
Typical Transfer Characteristics



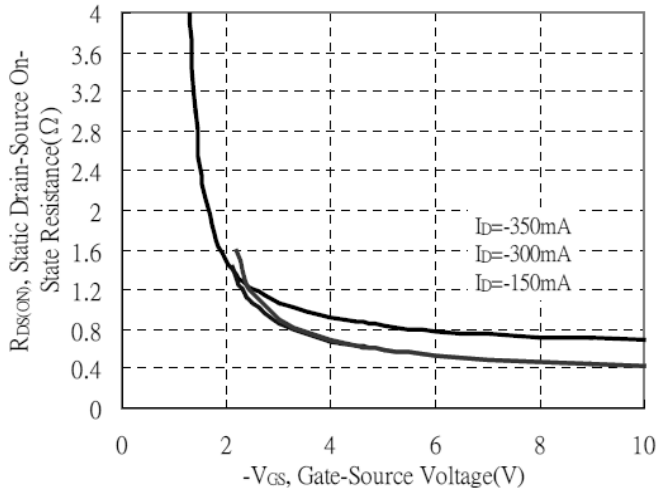
Static Drain-Source On-State resistance vs Drain Current



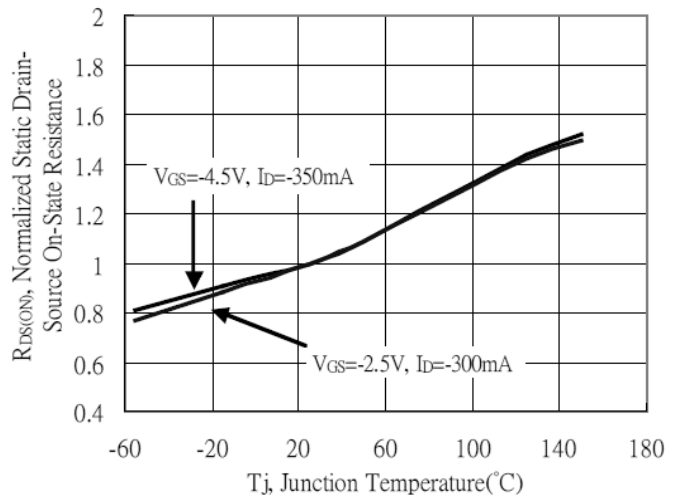
Reverse Drain Current vs Source-Drain Voltage



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

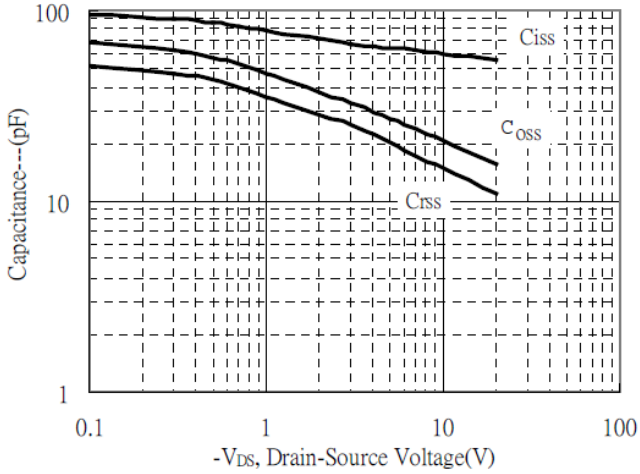


Drain-Source On-State Resistance vs Junction Temperature

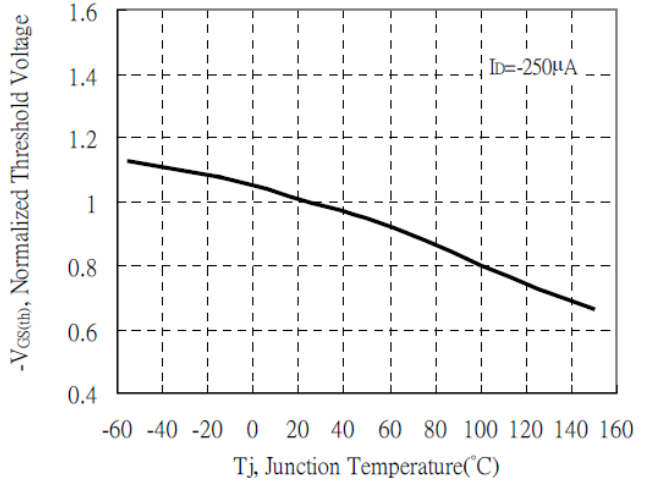


CHARACTERISTICS CURVES

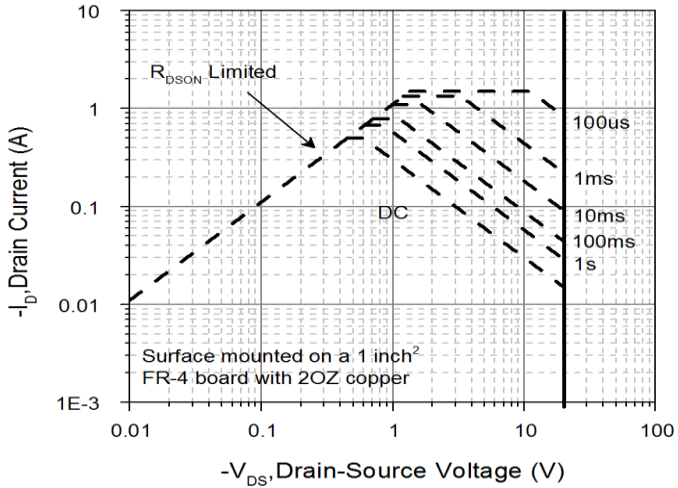
Capacitance vs Drain-to-Source Voltage



Threshold Voltage vs Junction Temperature



Safe Operating Area



Gate Charge Characteristics

