

General Description

The Sanrise SRC65R040BS is a high voltage power MOSFET, fabricated using advanced super junction technology. The resulting device has extremely low on resistance, low gate charge and fast switching time, making it especially suitable for applications which require superior power density and outstanding efficiency.

The SRC65R040BS break down voltage is 650V and it has a high rugged avalanche characteristics. The SRC65R040BS is available in TO-247 package.

Features

- Ultra Low $R_{DS(ON)} = 40m\Omega @ V_{GS} = 10V$.
- $V_{ds}@T_{jmax}=700v$
- Ultra Low Gate Charge, $Q_g=224nC$ typ.
- Fast switching capability
- Robust design with better EAS performance
- EMI Improved
- Non-automotive Qualified
- Ultra-fast body diode

Application

- Telecom Power
- EV Charger

Ordering Information

	SRC65R040BS□□-□	
Circuit Type	_____	E: Lead Free
Package	_____	G: Green
T: TO-247		Blank: Tube
		TR: Tape & Reel

Package	Part Number	Marking ID	Packing Type
TO-247	SRC65R040BST-G	SRC65R040BSTG	Tube

Symbol

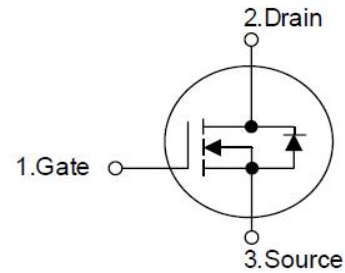
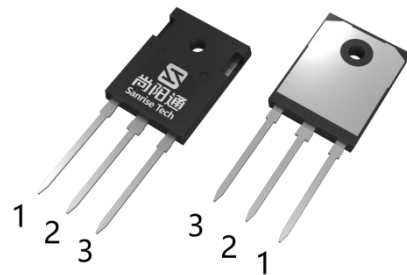


Figure 1 Symbol of SRC65R040BS

Package Type



TO-247

Figure 2 Package Type of SRC65R040BS

Absolute Maximum Ratings^{Note 1}

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	650	V
Gate-Source Voltage (static)	V_{GSS}	±20	V
Gate-Source Voltage (dynamic), AC ($f > 1$ Hz)	V_{GSS}	±30	V
Power Dissipation($T_C=25^{\circ}C, TO-247$)	P_{tot}	416	W
Continuous Drain Current	I_D	$T_C=25^{\circ}C$	67
		$T_C=100^{\circ}C$	42
		$T_C=125^{\circ}C$	30
Pulsed Drain Current (Note 2)	I_{DM}	201	A
Avalanche Energy, Single Pulse (Note 3)	E_{AS}	264	mJ
Avalanche Energy, Single Pulse (Note 5)	E_{AS}	3375	mJ
Avalanche Energy, Repetitive (Note 2)	E_{AR}	0.2	mJ
Avalanche Current, Repetitive (Note 2)	I_{AR}	2.8	A
Continuous Diode Forward Current	I_S	67	A
Diode Pulse Current	$I_{S,PULSE}$	201	A
Maximum diode commutation speed(Note 4)	di_F/dt	900	A/us
MOSFET dv/dt Ruggedness, $V_{DS} \leq 480V$	dv/dt	80	V/ns
Reverse Diode dv/dt , $V_{DS} \leq 480V, I_{SD} \leq I_D$	dv/dt	50	V/ns
Operating Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55 to 150	$^{\circ}C$
Lead Temperature (Soldering, 10 sec)	T_{LEAD}	260	$^{\circ}C$

Note:

- Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
- Repetitive Rating: Pulse width limited by maximum junction temperature
- $I_{AS} = 2.8A, V_{DD} = 60V, R_G = 25\Omega$, Starting $T_J = 25^{\circ}C$. Finish goods test condition.
- $V_{DS} = 0 \dots 400V, I_{SD} \leq 34A, T_J = 25^{\circ}C$
- $I_{AS} = 10A, V_{DD} = 60V, R_G = 25\Omega$, Starting $T_J = 25^{\circ}C$. Typical E_{AS} .

Thermal characteristics

Parameter (TO247-package)	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	-		0.3	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	-		63	

Electrical Characteristics

$T_j = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	650			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$			20	μA
Gate-Body Leakage Current	Forward	$I_{GSSF}, V_{GS}=30V, V_{DS}=0V$			100	nA
	Reverse	$I_{GSSR}, V_{GS}=-30V, V_{DS}=0V$			-100	
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=1.85mA$	3.5	4.5	5.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=34A$		32	40	$m\Omega$
Gate Resistance	R_G	$f=1MHz, \text{Open Drain}$		2.0		Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=400V, V_{GS}=0V, f=100kHz$		5415		pF
Output Capacitance	C_{OSS}			137		
Effective output capacitance, energy related ^{NOTE6}	$C_{O(er)}$	$V_{GS}=0V, V_{DS}=0\dots 480V$		198		pF
Effective output capacitance, time related ^{NOTE7}	$C_{O(tr)}$			1352		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=34A, R_G=3\Omega, V_{GS}=12V$		68		ns
Rise Time	t_r			22		
Turn-off Delay Time	$t_{d(off)}$			172		
Fall Time	t_f			13		
Gate Charge Characteristics						
Gate to Source Charge	Q_{gs}	$V_{DD}=400V, I_D=34A, V_{GS}=0 \text{ to } 10V$		46		nC
Gate to Drain Charge	Q_{gd}			139		
Gate Charge Total	Q_g			224		
Gate Plateau Voltage	$V_{plateau}$			7.2		V
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=34A$		0.86	1.1	V
Reverse Recovery Time	t_{rr}	$V_R=400V, I_F=34A, dI_F/dt=120A/\mu s$		220		ns
Reverse Recovery Charge	Q_{rr}			2.5		μC
Peak Reverse Recovery Current	I_{rrm}			20		A

Note:

6. $C_{O(er)}$ is a fixed capacitance that gives the same stored energy as C_{OSS} while V_{DS} is rising from 0 to 480V

7. $C_{O(tr)}$ is a fixed capacitance that gives the same charging time as C_{OSS} while V_{DS} is rising from 0 to 480 V



Shenzhen Sanrise Technology Co., LTD
<http://www.sanrise-tech.com>

IMPORTANT NOTICE

Shenzhen Sanrise Technology Co., LTD. reserves the right to make changes without further notice to any products or specifications herein. Shenzhen Sanrise Technology Co., LTD. does not assume any responsibility for use of any its products for any particular purpose, nor does Shenzhen Sanrise Technology Co., LTD. assume any liability arising out of the application or use of any its products or circuits. Shenzhen Sanrise Technology Co., LTD. does not convey any license under its patent rights or other rights nor the rights of others.

Main Site:

- Headquarter

Shenzhen Sanrise Technology Co., LTD.
A1206, Skyworth building, No. 008, gaoxinnan 1st Road,
Gaoxin District, Yuehai street,, Nanshan District, ShenZhen,
P.R.China
Tel: +86-755-22953335
Fax: +86-755-22916878

- Shanghai Office

Shenzhen Sanrise Technology Co., LTD
Rm.401, Building B, No. 666, Zhangheng Road,
Zhangjiang Hi-Tech Park, Shanghai, P.R.China
Tel: +86-21-68825918