

General Description

The Sanrise SRC60R030BS 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 SRC60R030BS break down voltage is 600V and it has a high rugged avalanche characteristics. The SRC60R030BS is available in TO-247, and TO-264 packages.

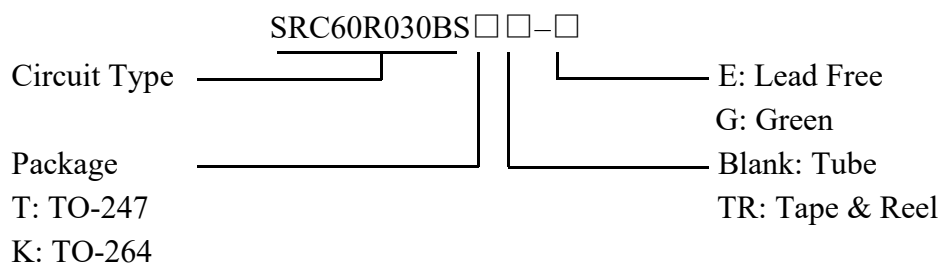
Features

- Ultra Low $R_{DS(ON)} = 30m\Omega @ V_{GS} = 10V$.
- Ultra Low Gate Charge, $Q_g = 231nC$ typ.
- Intrinsic Fast-Recovery Body Diode
- Fast switching capability
- Robust design with better EAS performance
- Non-automotive Qualified

Application

- AC/DC Power Supply
- EV Charger
- Server / Telecom
- Solar Inverter

Ordering Information



Package	Part Number	Marking ID	Packing Type
TO-247	SRC60R030BST-G	SRC60R030BSTG	Tube
TO-264	SRC60R030BSK-G	SRC60R030BSKG	Tube

Symbol

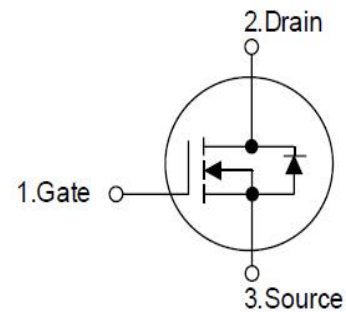


Figure 1 Symbol of SRC60R030BS

Package Type

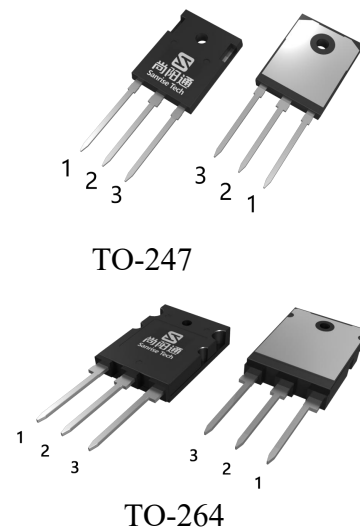


Figure 2 Package Types of SRC60R030BS

Absolute Maximum Ratings

Parameter		Symbol	Rating	Unit
Drain-Source Voltage (Note2)		V_{DSS}	600	V
Gate-Source Voltage		V_{GSS}	±30	V
Gate-Source Voltage (dynamic), AC ($f > 1$ Hz)		V_{GSS}	±30	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	100	A
	$T_C = 100^\circ\text{C}$		63.3	
	$T_C = 125^\circ\text{C}$		44.8	
Pulsed Drain Current (Note 3)		I_{DM}	300	A
Avalanche Energy, Single Pulse (Note 4)		E_{AS}	2200	mJ
Avalanche Energy, Repetitive (Note 3)		E_{AR}	2.3	mJ
Avalanche Current, Repetitive (Note 3)		I_{AR}	12	A
Continuous Diode Forward Current		I_S	100	A
Diode Pulse Current		$I_{S,PULSE}$	300	A
MOSFET dv/dt Ruggedness, $V_{DS} \leq 480\text{V}$		dv/dt	50	V/ns
Reverse Diode dv/dt, $V_{DS} \leq 480\text{V}$, $I_{SD} \leq I_D$		dv/dt	50	V/ns
Power dissipation		P_{tot}	625	W
Mounting torque			98	Ncm
Operating Junction Temperature		T_J	150	°C
Storage Temperature		T_{STG}	-55 to 150	°C
Lead Temperature (Soldering, 10 sec)		T_{LEAD}	260	°C
Insulation withstand voltage		V_{ISO}	NA	V

Note:

1. 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.
2. For Transient Voltage Spike.
3. Repetitive Rating: Pulse width limited by maximum junction temperature
4. $I_{AS} = 12\text{A}$, $V_{DD} = 60\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

Thermal characteristics

Parameter	Symbol	Package	Value (Max.)	Unit
Thermal resistance, junction - case	RthJC	TO-247	0.2	°C /W
		TO-264	0.14	
Thermal resistance, junction – ambient (Leaded)	RthJA	TO-247	62	°C /W
		TO-264	42	

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}	$V_{GS}=0V, I_D=250\mu A$	600			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V$			10	μA
Gate-Body Leakage Current	Forward	$I_{GSSF}, V_{GS}=30V, V_{DS}=0V$			100	nA
	Reverse	$I_{GSSR}, V_{GS}=-30V, V_{DS}=0V$			-1.0	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=2.4mA$	2.7	3.5	4.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=33.1A$		26.0	30	mΩ
Gate Resistance	R_G	f=1MHz, Open Drain		1.1		Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		7200		pF
Output Capacitance	C_{OSS}			482		
Reverse Transfer Capacitance	C_{RSS}			10.8		
Effective output capacitance, energy related ^{NOTE5}	$C_{O(er)}$	$V_{GS}=0V, V_{DS}=0\dots 480V$		248		pF
Effective output capacitance, time related ^{NOTE6}	$C_{O(tr)}$			1290		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=50A, R_G=1.8\Omega, V_{GS}=10V$		21		ns
Rise Time	t_r			30		
Turn-off Delay Time	$t_{d(off)}$			94		
Fall Time	t_f			12		
Gate Charge Characteristics						
Gate to Source Charge	Q_{gs}	$V_{DD}=480V, I_D=50A, V_{GS}=0 \text{ to } 10V$		55		nC
Gate to Drain Charge	Q_{gd}			78		
Gate Charge Total	Q_g			231		
Gate Plateau Voltage	$V_{plateau}$			6.0		V
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=33.1A$		0.91	1.1	V
Reverse Recovery Time	t_{rr}	$V_R=100V, I_F=50A, dI_F/dt=100A/\mu s$		176		ns
Reverse Recovery Charge	Q_{rr}			1.19		μC
Peak Reverse Recovery Current	I_{rrm}			13.5		A

Note:

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

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