

General Description

The Sanrise SRC60R022FBS 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 SRC60R022FBS break down voltage is 600V and it has a high rugged avalanche characteristics.

The SRC60R022FBS is available in TO-247 package.

Features

- Ultra Low $R_{DS(ON)} = 22m\Omega @ V_{GS} = 10V$.
- $V_{ds}@T_{jmax} = 650v$.
- Ultra Low Gate Charge, $Q_g = 168nC$ typ.
- Intrinsic Fast-Recovery Body Diode
- Fast switching capability
- Robust design with better EAS performance
- Non-automotive Qualified
- Ultra-fast body diode

Application

- EV Charger
- Server / Telecom

Symbol

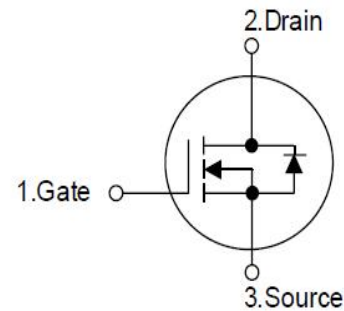
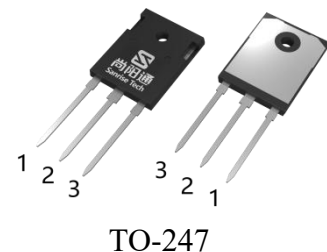


Figure 1 Symbol of SRC60R022FBS

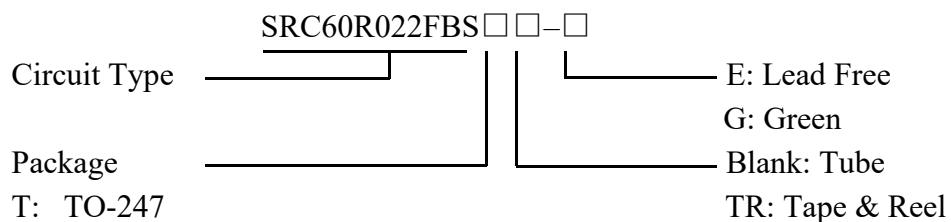
Package Type



TO-247

Figure 2 Package Type of SRC60R022FBS

Ordering Information



Package	Part Number	Marking ID	Packing Type
TO-247	SRC60R022FBST-G	SRC60R022FBSTG	Tube

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	600	V
Gate-Source Voltage	V_{GSS}	±30	V
Gate-Source Voltage (dynamic), AC ($f > 1$ Hz)	V_{GSS}	±30	V
Power Dissipation($T_C=25^{\circ}C, TO-247$)	P_{tot}	595	W
Continuous Drain Current	I_D	$T_C=25^{\circ}C$	115
		$T_C=100^{\circ}C$	72.7
		$T_C=125^{\circ}C$	51.4
Pulsed Drain Current (Note 2)	I_{DM}	345	A
Avalanche Energy, Single Pulse (Note 3)	E_{AS}	600	mJ
Avalanche Energy, Single Pulse (Note 4)	E_{AS}	3802	mJ
Avalanche Energy, Repetitive (Note 2)	E_{AR}	1.6	mJ
Avalanche Current, Repetitive (Note 2)	I_{AR}	7.8	A
Continuous Diode Forward Current	I_S	115	A
Diode Pulse Current	$I_{S,PULSE}$	345	A
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
- $I_{AS} = 7.8A, V_{DD} = 60V, R_G = 25\Omega, \text{Starting } T_J = 25^{\circ}C.$ Finish goods test condition.
- $I_{AS} = 19.5A, V_{DD} = 60V, R_G = 25\Omega, \text{Starting } T_J = 25^{\circ}C.$ Typical Eas.

Thermal characteristics

Parameter	Symbol	Package	Value (Max.)	Unit
Thermal resistance, junction - case	R_{thJC}	TO-247	0.21	$^{\circ}C / W$
Thermal resistance, junction – ambient (Leaded)	R_{thJA}	TO-247	62	$^{\circ}C / W$

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	$I_{GSSF}, V_{GS}=30V, V_{DS}=0V$			200	nA
	Reverse	$I_{GSSR}, V_{GS}=-30V, V_{DS}=0V$			-200	
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=3.0mA$	3.0	4.0	5.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=57A$		18.6	22	mΩ
Gate Resistance	R_G	f=1MHz, Open Drain		1.6		Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=400V, V_{GS}=0V,$ f=100KHz		10.3		nF
Output Capacitance	C_{OSS}			206		pF
Effective output capacitance, energy related ^{NOTE5}	$C_{O(er)}$	$V_{GS}=0V,$ $V_{DS}=0\dots 400V$		301.4		pF
Effective output capacitance, time related ^{NOTE6}	$C_{O(tr)}$			1835.7		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=57A$ $R_G=1.8\Omega, V_{GS}=10V$		29		ns
Rise Time	t_r			26		
Turn-off Delay Time	$t_{d(off)}$			74		
Fall Time	t_f			6		
Gate Charge Characteristics						
Gate to Source Charge	Q_{gs}	$V_{DD}=480V, I_D=57A$ $V_{GS}=0$ to 10V		78		nC
Gate to Drain Charge	Q_{gd}			46.5		
Gate Charge Total	Q_g			168		
Gate Plateau Voltage	$V_{plateau}$			6.5		V
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=57A$		0.9	1.1	V
Reverse Recovery Time	t_{rr}	$V_R=400V, I_F=57A$ $dI_F/dt=90A/\mu s$		227		ns
Reverse Recovery Charge	Q_{rr}			2.2		μC
Peak Reverse Recovery Current	I_{rrm}			16.2		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 400V
- $C_{O(tr)}$ is a fixed capacitance that gives the same charging time as C_{OSS} while V_{DS} is rising from 0 to 400V



Shenzhen Sanrise Technology Co., LTD

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