

General Description

The Sanrise SRC65R032FBS 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 SRC65R032FBS break down voltage is 650V and it has a high rugged avalanche characteristics.

The SRC65R032FBS is available in TO-247-4N package.

Features

- Ultra Low $R_{DS(ON)} = 32m\Omega @ V_{GS} = 10V$.
- $V_{ds}@T_{jmax}=700V$.
- Ultra Low Gate Charge, $Q_g=152nC$ typ.
- Fast switching capability
- Robust design with better EAS performance
- Optimized switching process
- Non-automotive Qualified
- Ultra-fast body diode

Application

- EV Charger
- High Performance PS

Symbol

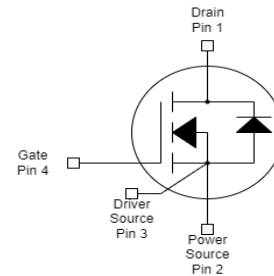
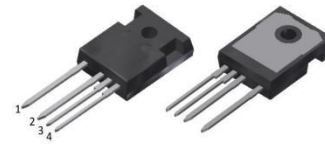


Figure 1 Symbol of SRC65R032FBS

Package Type



TO-247-4 Narrow

Figure 2 Package Type of SRC65R032FBS

Ordering Information

SRC65R032FBS □ □ - □	
Circuit Type	E: Lead Free
Package	G: Green
T4N: TO-247-4 Narrow	Blank: Tube

Package	Part Number	Marking ID	Packing Type
TO-247-4 Narrow	SRC65R032FBST4N-G	SRC65R032FBST4NG	Tube

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($T_C=25^{\circ}\text{C}$, TO-247-4N)		P_{tot}	500	W
Continuous Drain Current	$T_C=25^{\circ}\text{C}$	I_D	82	A
	$T_C=100^{\circ}\text{C}$		52	
	$T_C=125^{\circ}\text{C}$		37	
Pulsed Drain Current (Note 2)		I_{DM}	246	A
Avalanche Energy, Single Pulse (Note 3)		E_{AS}	303	mJ
Avalanche Energy, Single Pulse (Note 4)		E_{AS}	4860	mJ
Avalanche Energy, Repetitive (Note 2)		E_{AR}	0.3	mJ
Avalanche Current, Repetitive (Note 2)		I_{AR}	3	A
Continuous Diode Forward Current		I_S	82	A
Diode Pulse Current		$I_{S,PULSE}$	246	A
MOSFET dv/dt Ruggedness, $V_{DS} \leq 480\text{V}$		dv/dt	120	V/ns
Reverse Diode dv/dt, $V_{DS} \leq 480\text{V}$, $I_{SD} \leq I_D$		dv/dt	50	V/ns
Operating Junction Temperature		T_J	150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 to 150	$^{\circ}\text{C}$
Lead Temperature (Soldering, 10 sec)		T_{LEAD}	260	$^{\circ}\text{C}$

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. Repetitive Rating: Pulse width limited by maximum junction temperature
3. $I_{AS}=3.0\text{A}$, $V_{DD}=60\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$. Finish goods test condition.
4. $I_{AS}=12\text{A}$, $V_{DD}=60\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$. Typical Eas.

Thermal Resistance

Parameter (TO-247-4N-package)	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	-		0.25	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	-		60	

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 =250uA	650			V
Zero Gate Voltage Drain Current		I _{DSS}	V _{DS} =650V, V _{GS} =0V			20	uA
Gate-Body Leakage Current	Forward	I _{GSSF}	V _{GS} =20V, V _{DS} =0V			100	nA
	Reverse	I _{GSSR}	V _{GS} =-20V, V _{DS} =0V			-100	
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250uA	3.5	4.7	5.5	V
Static Drain-Source On-Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =34A		26	32	mΩ
Gate Resistance		R _G	f=1MHz, Open Drain		1.4		Ω
Dynamic Characteristics							
Input Capacitance		C _{ISS}	V _{DS} =400V, V _{GS} =0V, f=100KHz		6.8		nF
Output Capacitance		C _{OSS}			164		pF
Effective output capacitance, energy related ^{NOTE5}		C _{O(er)}	V _{GS} =0V, V _{DS} =0...480V		227		pF
Effective output capacitance, time related ^{NOTE6}		C _{O(tr)}			1067		
Turn-on Delay Time		t _{d(on)}	V _{DD} =400V, I _D =34A R _G =2Ω, V _{GS} =12V		44		ns
Rise Time		t _r			13		
Turn-off Delay Time		t _{d(off)}			121		
Fall Time		t _f			5		
Gate Charge Characteristics							
Gate to Source Charge		Q _{gs}	V _{DD} =400V, I _D =34A V _{GS} =0 to 10V		53		nC
Gate to Drain Charge		Q _{gd}			69		
Gate Charge Total		Q _g			152		
Gate Plateau Voltage		V _{plateau}			7.6		V
Reverse Diode Characteristics							
Drain-Source Diode Forward Voltage		V _{SD}	V _{GS} =0V, I _{SD} =34A		0.9	1.1	V
Reverse Recovery Time		t _{rr}	V _R =400V, I _F =34A dI _F /dt=100A/us		200		ns
Reverse Recovery Charge		Q _{rr}			2.4		uC
Peak Reverse Recovery Current		I _{rrm}			20.8		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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