

General Description

The Sanrise SRC65R108BS 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 SRC65R108BS break down voltage is 650V and it has a high rugged avalanche characteristics. The SRC65R108BS is available in TO-247, TO-220C, TO-263-2 and TO-220F packages.

Features

- Ultra Low $R_{DS(ON)} = 108m\Omega @ V_{GS} = 10V$.
- $V_{ds@Tjmax} = 700V$.
- Ultra Low Gate Charge, $Q_g = 81nC$ typ.
- Intrinsic Fast-Recovery Body Diode
- Fast switching capability
- Robust design with better EAS performance
- Non-automotive Qualified
- Ultra-fast body diode

Application

- Server/ Telecom Power

Symbol

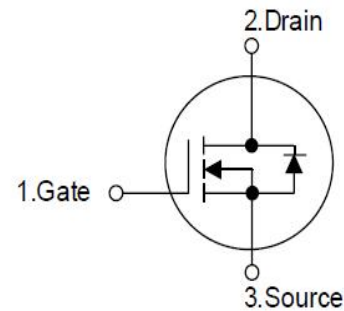


Figure 1 Symbol of SRC65R108BS

Package Type

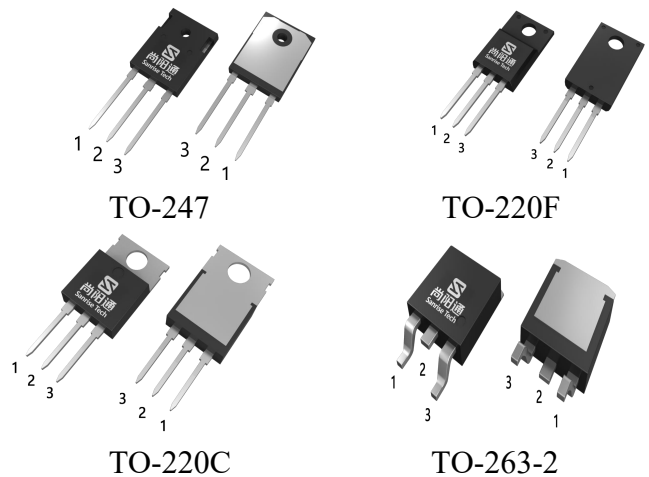


Figure 2 Package Types of SRC65R108BS

Ordering Information

SRC65R108BS□□-□		
Circuit Type	_____	E: Lead Free
Package	_____	G: Green
T: TO-247		Blank: Tube
TF: TO-220F		TR: Tape & Reel
TC: TO-220C		
S2: TO-263-2		

Package	Part Number	Marking ID	Packing Type
TO-247	SRC65R108BST-G	SRC65R108BSTG	Tube
TO-220F	SRC65R108BSTF-G	SRC65R108BSTFG	Tube
TO-220C	SRC65R108BSTC-G	SRC65R108BSTCG	Tube
TO-263-2	SRC65R108BSS2TR-G	SRC65R108BSS2G	Tape & Reel

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-220C, TO-247, TO-263-2)		P_{tot}	231	W
Power Dissipation($T_C=25^{\circ}\text{C}$, TO-220F)		P_{tot}	31	W
Continuous Drain Current	$T_C=25^{\circ}\text{C}$	I_D	30	A
	$T_C=100^{\circ}\text{C}$		19	
	$T_C=125^{\circ}\text{C}$		13	
Pulsed Drain Current (Note 2)		I_{DM}	90	A
Avalanche Energy, Single Pulse (Note 3)		E_{AS}	135	mJ
Avalanche Energy, Single Pulse (Note 4)		E_{AS}	1166	mJ
Avalanche Energy, Repetitive (Note 2)		E_{AR}	0.4	mJ
Avalanche Current, Repetitive (Note 2)		I_{AR}	3.0	A
Continuous Diode Forward Current		I_S	30	A
Diode Pulse Current		$I_{S,PULSE}$	90	A
MOSFET dv/dt Ruggedness, $V_{DS} \leq 480\text{V}$		dv/dt	80	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. $I_{AS}=2.0\text{A}$, $V_{DD}=60\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$. Finish goods test condition.
4. $I_{AS}=5.88\text{A}$, $V_{DD}=60\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$. Typical Eas.

Thermal characteristics

Parameter		Symbol	Min	Typ	Max	Unit
Thermal resistance, Junction-to-Case	TO-220F	R_{thJC}			4.0	$^{\circ}\text{C} / \text{W}$
	TO-220C				0.54	
	TO-263-2				0.54	
	TO-247				0.54	
Thermal resistance, Junction-to-Ambient	TO-220F	R_{thJA}			81	$^{\circ}\text{C} / \text{W}$
	TO-220C				65	
	TO-263-2				65	
	TO-247				65	

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			10	uA
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 =0.8mA	3.5	4.5	5.5	V
Static Drain-Source On-Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =16A		89	108	mΩ
Gate Resistance		R _G	f=1MHz, Open Drain		1.0		Ω
Dynamic Characteristics							
Input Capacitance		C _{ISS}	V _{DS} =400V, V _{GS} =0V, f=100KHz		1914		pF
Output Capacitance		C _{OSS}			54		pF
Effective output capacitance, energy related ^{NOTE5}		C _{O(er)}	V _{GS} =0V, V _{DS} =0...480V		80		pF
Effective output capacitance, time related ^{NOTE6}		C _{O(tr)}			630		
Turn-on Delay Time		t _{d(on)}	V _{DD} =400V, I _D =16A R _G =3Ω, V _{GS} =12V		37		ns
Rise Time		t _r			19		
Turn-off Delay Time		t _{d(off)}			50		
Fall Time		t _f			9		
Gate Charge Characteristics							
Gate to Source Charge		Q _{gs}	V _{DD} =400V, I _D =16A V _{GS} =0 to 10V		18		nC
Gate to Drain Charge		Q _{gd}			43		
Gate Charge Total		Q _g			81		
Gate Plateau Voltage		V _{plateau}			7.6		V
Reverse Diode Characteristics							
Drain-Source Diode Forward Voltage		V _{SD}	V _{GS} =0V, I _{SD} =16A		0.9	1.1	V
Reverse Recovery Time		t _{rr}	V _R =400V, I _F =16A dI _F /dt=100A/us		156		ns
Reverse Recovery Charge		Q _{rr}			1.86		uC
Peak Reverse Recovery Current		I _{rrm}			20		A

Note:

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

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



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