

General Description

The Sanrise SRC60R075BS 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 SRC60R075BS break down voltage is 600V and it has a high rugged avalanche characteristics. The SRC60R075BS is available in TO-263-2 , TO-220F, TO-220C and TO-247 packages.

Features

- Ultra Low $R_{DS(ON)} = 75m\Omega @ V_{GS} = 10V$.
- $V_{ds}@T_{jmax}=650v$
- Ultra Low Gate Charge, $Q_g=133nC$ 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

	SRC60R075BS□□-□	
Circuit Type		E: Lead Free
Package		G: Green
T: TO-247		Blank: Tube
S2: TO-263-2		TR: Tape & Reel
TF: TO-220F		
TC: TO-220C		

Symbol

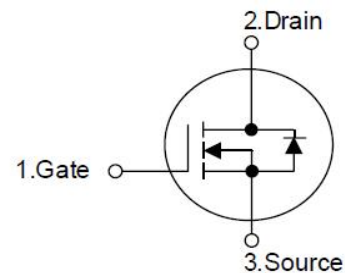


Figure 1 Symbol of SRC60R075BS

Package Type

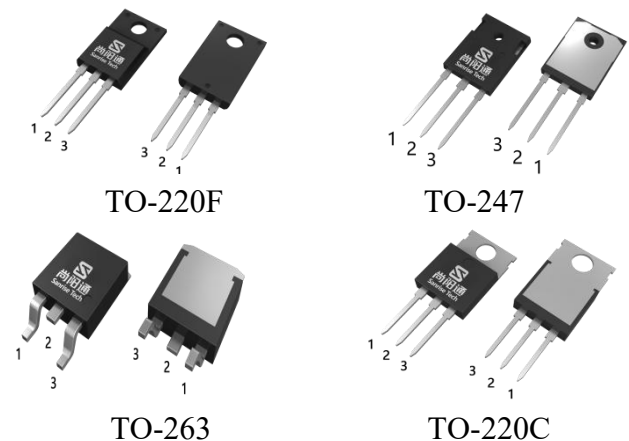


Figure 2 Package Types of SRC60R075BS

Package	Part Number	Marking ID	Packing Type
TO-247	SRC60R075BST-G	SRC60R075BSTG	Tube
TO-220F	SRC60R075BSTF-G	SRC60R075BSTFG	Tube
TO-263-2	SRC60R075BSS2TR-G	SRC60R075BSS2G	Tape & Reel
TO-220C	SRC60R075BSTC-G	SRC60R075BSTCG	Tube

Absolute Maximum Ratings^{Note 1}

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	600	V
Gate-Source Voltage (static)		V_{GSS}	±20	V
Gate-Source Voltage (dynamic), AC ($f > 1$ Hz)		V_{GSS}	±30	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	44	A
	$T_C = 100^\circ\text{C}$		27	
	$T_C = 125^\circ\text{C}$		19	
Power Dissipation ($T_C = 25^\circ\text{C}, \text{TO-220F}$)		P_{tot}	34	W
Power Dissipation ($T_C = 25^\circ\text{C}, \text{TO-247}, \text{TO-220C}, \text{TO-263}$)		P_{tot}	328	W
Pulsed Drain Current (Note 2)		I_{DM}	132	A
Avalanche Energy, Single Pulse (Note 3)		E_{AS}	320	mJ
Avalanche Energy, Single Pulse (Note 4)		E_{AS}	1500	mJ
Avalanche Energy, Repetitive (Note 2)		E_{AR}	0.2	mJ
Avalanche Current, Repetitive (Note 2)		I_{AR}	4.0	A
Continuous Diode Forward Current		I_S	44	A
Diode Pulse Current		$I_{S,PULSE}$	132	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:

- 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
- $I_{AS} = 4.0\text{A}$, $V_{DD} = 60\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$. Finish goods test condition
- $I_{AS} = 8.7\text{A}$, $V_{DD} = 60\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$. Typical E_{AS}

Thermal characteristics

Parameter		Symbol	Min	Typ	Max	Unit
Thermal resistance, Junction-to-Case	TO-220F	R_{thJC}			3.6	$^\circ\text{C}/\text{W}$
	TO-220C				0.38	
	TO-247				0.38	
	TO-263				0.38	
Thermal resistance, Junction-to-Ambient	TO-220F	R_{thJA}			70	$^\circ\text{C}/\text{W}$
	TO-220C				59	
	TO-247				59	
	TO-263				59	

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	$I_{GSSF}, V_{GS}=20V, V_{DS}=0V$			100	nA
	Reverse	$I_{GSSR}, V_{GS}=-20V, V_{DS}=0V$			-100	
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=1.0mA$	3.5	4.5	5.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=24A$		60	75	mΩ
Gate Resistance	R_G	f=1MHz, Open Drain		2.0		Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=400V, V_{GS}=0V,$ f=100kHz		2792		pF
Output Capacitance	C_{OSS}			78		pF
Effective output capacitance, energy related ^{NOTE5}	$C_{O(er)}$	$V_{GS}=0V,$ $V_{DS}=0\dots 480V$		110		pF
Effective output capacitance, time related ^{NOTE6}	$C_{O(tr)}$			751		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=24A$ $R_G=3\Omega, V_{GS}=12V$		50		ns
Rise Time	t_r			16		
Turn-off Delay Time	$t_{d(off)}$			69		
Fall Time	t_f			10		
Gate Charge Characteristics						
Gate to Source Charge	Q_{gs}	$V_{DD}=480V, I_D=24A$ $V_{GS}=0$ to 10V		24		nC
Gate to Drain Charge	Q_{gd}			85		
Gate Charge Total	Q_g			133		
Gate Plateau Voltage	$V_{plateau}$			7.0		V
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=24A$		0.86	1.1	V
Reverse Recovery Time	t_{rr}	$V_R=400V, I_F=24A$ dI _F /dt=120A/us		190		ns
Reverse Recovery Charge	Q_{rr}			1.9		μC
Peak Reverse Recovery Current	I_{rrm}			18		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



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