

General Description

The Sanrise SRC60R2K1 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 SRC60R2K1 break down voltage is 600V and it has a high rugged avalanche characteristics. The SRC60R2K1 is available in TO-251, TO-252 and TO-220F packages.

Features

- Ultra Low $R_{DS(ON)} = 2.1\Omega @ V_{GS} = 10V$.
- Ultra Low Gate Charge, $Q_g = 1.6nC$ typ.
- Fast switching capability
- Robust design with better EAS performance
- EMI Improved

Application

- LED Lighting Power
- General Used Charger / Adapter

Symbol

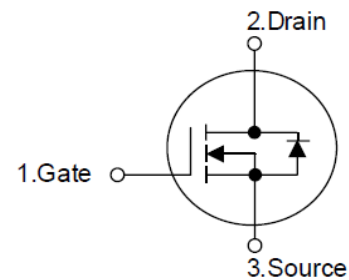


Figure 1 Symbol of SRC60R2K1

Package Type

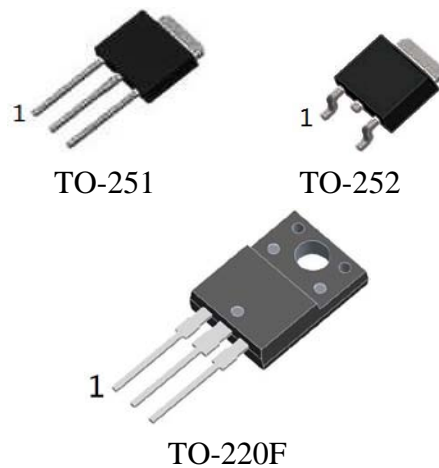
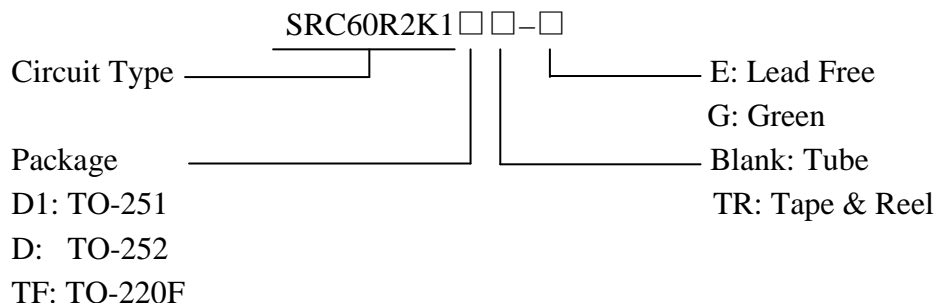


Figure 2 Package Types of SRC60R2K1

Ordering Information



Package	Part Number		Marking ID		Packing Type
	Lead Free	Green	Lead Free	Green	
TO-251	SRC60R2K1D1-E	SRC60R2K1D1-G	SRC60R2K1D1E	SRC60R2K1D1G	Tube
TO-252	SRC60R2K1DTR-E	SRC60R2K1DTR-G	SRC60R2K1DE	SRC60R2K1DG	Tape & Reel
TO-220F	SRC60R2K1TF-E	SRC60R2K1TF-G	SRC60R2K1TFE	SRC60R2K1TFG	Tube

Absolute Maximum Ratings

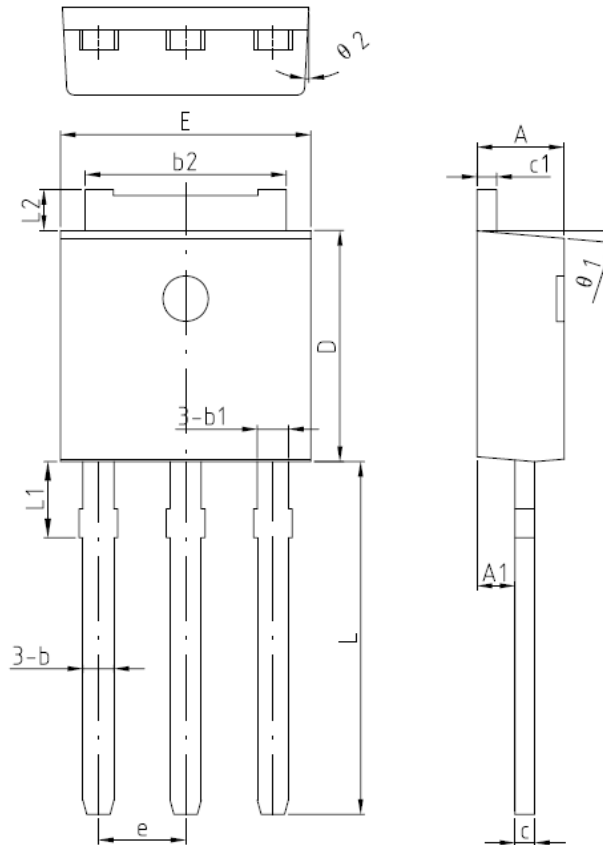
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	630	V
Gate-Source Voltage		V_{GSS}	±30	V
Continuous Drain Current	$T_C=25^{\circ}C$	I_D	1.9	A
	$T_C=125^{\circ}C$		0.8	
Pulsed Drain Current (Note 2)		I_{DM}	5.8	A
Avalanche Energy, Single Pulse (Note 3)		E_{AS}	52	mJ
Avalanche Energy, Repetitive (Note 2)		E_{AR}	0.05	mJ
Avalanche Current, Repetitive (Note 2)		I_{AR}	0.9	A
Continuous Diode Forward Current		I_S	1.9	A
Diode Pulse Current		$I_{S,PULSE}$	5.8	A
Operating Junction Temperature		T_J	150	°C
Storage Temperature		T_{STG}	-65 to 150	°C
Lead Temperature (Soldering, 10 sec)		T_{LEAD}	300	°C

Note:

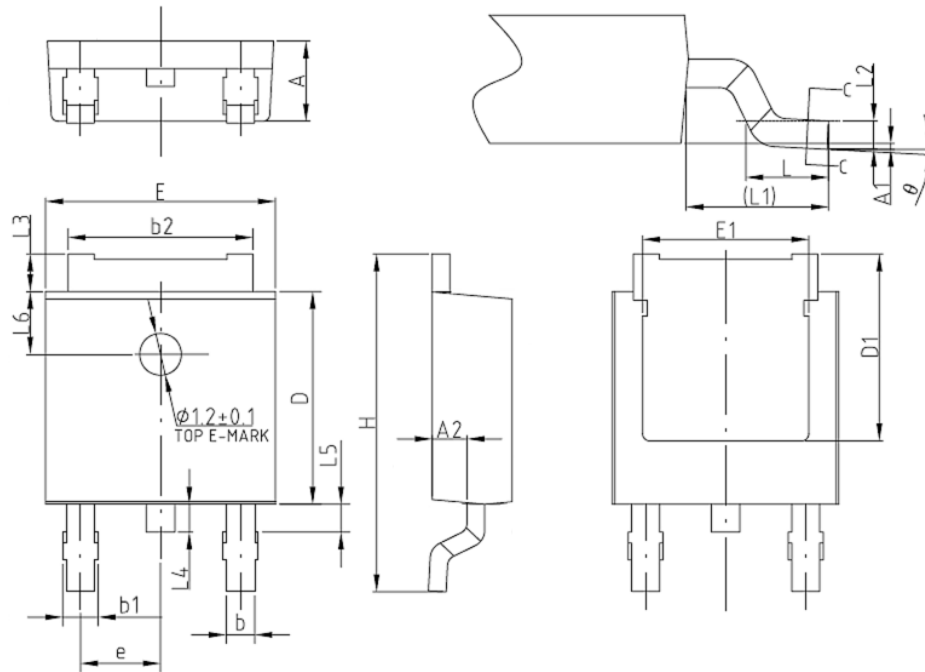
1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. $I_{AS} = 0.9A$, $V_{DD} = 60V$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}C$

Electrical Characteristics
 $T_J = 25^{\circ}\text{C}$, unless otherwise specified.

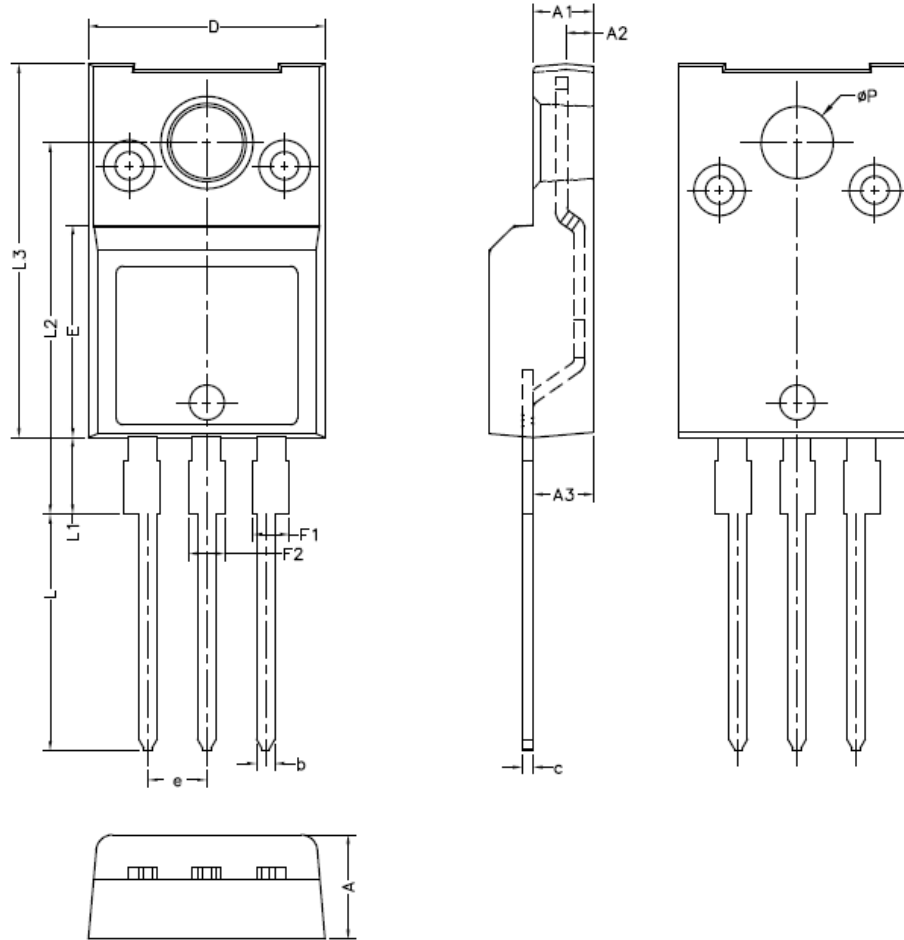
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	600			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V$			1	μA
Gate-Body Leakage Current	Forward	$I_{GSSF}, V_{GS}=30V, V_{DS}=0V$			100	nA
	Reverse	$I_{GSSR}, V_{GS}=-30V, V_{DS}=0V$			-100	
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	3.4	4.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1.0A$		1.7	2.1	Ω
Gate Resistance	R_G	$f=1MHz, \text{Open Drain}$		7		Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		52		pF
Output Capacitance	C_{OSS}			77		
Reverse Transfer Capacitance	C_{RSS}			1.7		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=1.0A, R_G=10\Omega, V_{GS}=10V$		20		ns
Rise Time	t_r			7		
Turn-off Delay Time	$t_{d(off)}$			40		
Fall Time	t_f			7		
Gate Charge Characteristics						
Gate to Source Charge	Q_{gs}	$V_{DD}=480V, I_D=1.0A, V_{GS}=0 \text{ to } 10V$		0.5		nC
Gate to Drain Charge	Q_{gd}			0.6		
Gate Charge Total	Q_g			1.6		
Gate Plateau Voltage	$V_{plateau}$			5.7		V
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=1A$		0.83	1.1	V
Reverse Recovery Time	t_{rr}	$V_R=400V, I_F=1.0A, dI_F/dt=100A/\mu s$		124		ns
Reverse Recovery Charge	Q_{rr}			0.46		μC
Peak Reverse Recovery Current	I_{rrm}			7.4		A

Mechanical Dimensions
TO-251
Unit: mm


Symbol	Dimensions(mm)		
	Min.	Typ.	Max.
A	2.20	2.30	2.40
A1	0.90	1.01	1.17
b	0.50	-	0.91
b1	-	0.81	-
b2	5.13	5.33	5.46
c	0.46	0.50	0.60
c1	0.46	0.50	0.60
D	5.95	6.10	6.25
E	6.45	6.60	6.75
e	2.286(BSC)		
L	9.00	9.30	9.60
L1	-	2.00	-
L2	0.90	-	1.25
θ1	-	5°	-
θ2	-	3°	-

Mechanical Dimensions (Continued)
TO-252
Unit: mm


Symbol	Dimensions(mm)		
	Min.	Typ.	Max.
A	2.20	2.30	2.40
A1	0	-	0.10
A2	0.90	1.00	1.17
b	0.70	0.76	0.90
b1	0.77	-	1.10
b2	5.13	5.33	5.46
c	0.45	-	0.60
D	5.95	6.10	6.25
D1	-	5.30	-
E	6.45	6.60	6.75
E1	-	4.80	-
e	2.286(BSC)		
H	9.70	10.10	10.40
L	1.25	1.50	1.75
L1	-	2.90	-
L2	-	0.51	-
L3	0.90	-	1.25
L4	-	0.80	-
L5	-	1.00	-
L6	-	1.80	-
θ	0°	-	8°

Mechanical Dimensions (Continued)
TO-220F
Unit: mm


Symbol	Dimensions(mm)		
	Min.	Typ.	Max.
A	4.40	4.50	4.60
A1	2.50	2.60	2.70
A2	1.10	1.20	1.30
A3	2.49	2.59	2.69
b	0.76	-	0.89
c	0.46	-	0.59
D	10.10	10.20	10.30
E	9.05	9.15	9.25
e	2.54(BSC)		
F1	1.22	-	1.60
F2	1.17	-	1.55
L	10.00	10.20	10.40
L1	3.15	3.30	3.45
L2	15.85	16.00	16.15
L3	16.00	16.10	16.20
P	3.00	3.10	3.20



Sanrise Technology Limited Company

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