

General Description

The Sanrise SRT15N075H is a low voltage power MOSFET, fabricated using advanced split gate trench 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 synchronous rectification.

The SRT15N075H break down voltage is 150V and it has a high rugged avalanche characteristics. The SRT15N075H is available in TO-220C and TO-263-2 and PDFN5*6 packages.

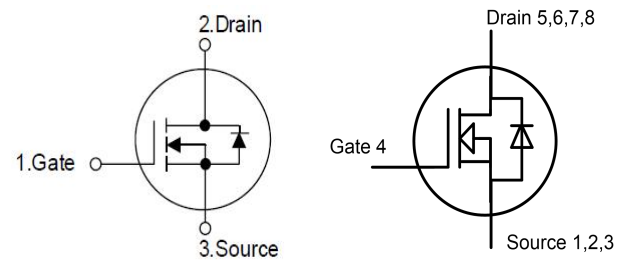
Features

- Ultra Low
 $R_{DS(ON_TYP)} = 6.0m\Omega$, TO-220C @ $V_{GS} = 10V$.
 $R_{DS(ON_TYP)} = 5.9m\Omega$, TO-263-2@ $V_{GS} = 10V$.
 $R_{DS(ON_TYP)} = 5.5m\Omega$, PDFN5*6 @ $V_{GS} = 10V$.
- Ultra Low Gate Charge, $Q_g=64.2nC$ typ.
- Fast switching capability
- Robust design with better EAS performance
- EMI Improved
- Non-automotive Qualified

Application

- Server/Telecom
- High Power Supply
- Solar
- UPS

Symbol

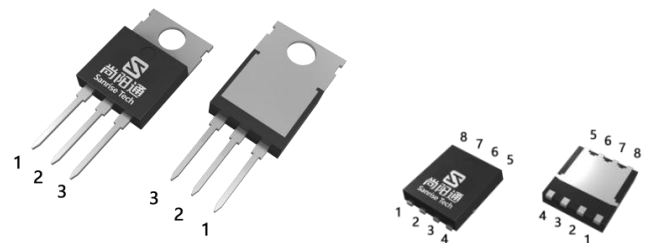


TO-220C, TO-263-2

PDFN5*6

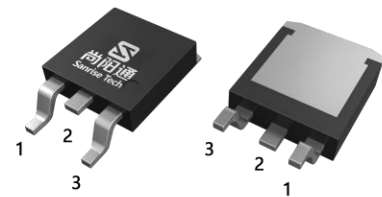
Figure 1 Symbol of SRT15N075H

Package Type



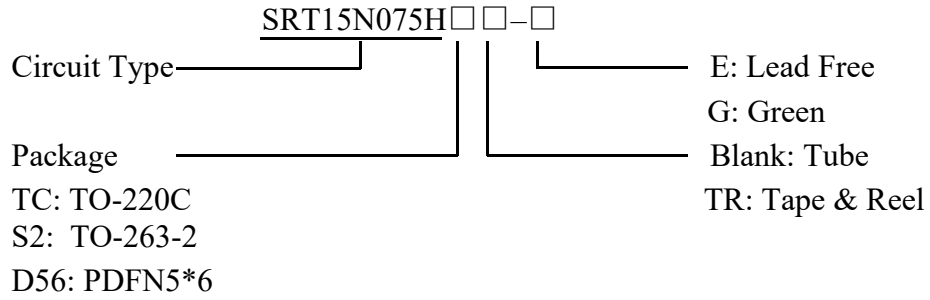
TO-220C

PDFN5*6



TO-263-2

Figure 2 Package Type of SRT15N075H

Ordering Information


Package	Part Number	Marking ID	Packing Type
TO-220C	SRT15N075HTC-G	SRT15N075HTCG	Tube
TO-263-2	SRT15N075HS2TR-G	SRT15N075HS2G	Tape & Reel
PDFN5*6	SRT15N075HD56TR-G	SRT15N075HD56G	Tape & Reel

Absolute Maximum Ratings

Parameter		Symbol	Rating		Unit
Drain-Source Voltage		V_{DSS}	150		V
Gate-Source Voltage		V_{GSS}	±20		V
Continuous Drain Current, Package Limited	$T_C=25^{\circ}\text{C}$	I_D	TO-220C	113	A
			TO-263-2	113	
			PDFN56	113	
	$T_C=100^{\circ}\text{C}$		TO-220C	80	
			TO-263-2	80	
			PDFN56	80	
Continuous Drain Current, Silicon	$T_C=25^{\circ}\text{C}$	TO-220C	113		
		TO-263-2	113		
		PDFN56	113		
Pulsed Drain Current (Note 2)		I_{DM}	TO-220C	452	A
			TO-263-2	452	
			PDFN56	452	
Power Dissipation ($T_C = 25^{\circ}\text{C}$)		P_D	214		W
Avalanche Destructive Energy, Single Pulse (Note 4)		E_{AS_Limit}	552		mJ
Avalanche Energy, Single Pulse (Note 3)		E_{AS}	81		mJ
Avalanche Energy, Repetitive (Note 2)		E_{AR}	0.1		mJ
Avalanche Current, Repetitive (Note 2)		I_{AR}	22		A
Continuous Diode Forward Current		I_S	113		A
Diode Pulse Current		$I_{S,PULSE}$	452		A
Operating Junction Temperature		T_J	175		$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 to 175		$^{\circ}\text{C}$
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
- $I_{AS} = 18\text{A}$, $V_{DD} = 60\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$
- $I_{AS_Limit} = 47\text{A}$, $V_{DD} = 60\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

7.5mΩ, 150V, N-Channel Power MOSFET
SRT15N075H
Thermal Resistance

Parameter		Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	TO-220C	R _{thJC}			0.7	°C/W
	TO-263-2				0.7	
	PDFN5*6				0.7	
Thermal Resistance, Junction-to-Ambient	TO-220C	R _{thJA}			62	
	TO-263-2				62	
	PDFN5*6				50	

7.5mΩ, 150V, N-Channel Power MOSFET
SRT15N075H
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}	$V_{GS}=0V, I_D=250\mu A$	150			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V$			1	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	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=0.25mA$	2.0	3.0	4.0	V
Static Drain-Source On-Resistance	TO-220C	$R_{DS(ON)}, V_{GS}=10V, I_D=60A$		6.0	7.5	$m\Omega$
	TO-263-2			5.9	7.5	$m\Omega$
	PDFN5*6			5.5	7.5	$m\Omega$
Gate Resistance	R_G	$f=1MHz, \text{Open Drain}$		1.2		Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		4.3		nF
Output Capacitance	C_{OSS}			1.5		nF
Reverse Transfer Capacitance	C_{RSS}			47		pF
Effective output capacitance, energy related ^{NOTE5}	$C_{O(er)}$	$V_{GS}=0V, V_{DS}=0\dots 90V$		1.4		nF
Effective output capacitance, time related ^{NOTE6}	$C_{O(tr)}$			1.7		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=75V, I_D=60A, R_G=1.6\Omega, V_{GS}=10V$		14		nS
Rise Time	t_r			5		
Turn-off Delay Time	$t_{d(off)}$			21		
Fall Time	t_f			5		
Gate Charge Characteristics						
Gate to Source Charge	Q_{gs}	$V_{DD}=75V, I_D=60A, V_{GS}=0 \text{ to } 10V$		20.7		nC
Gate to Drain Charge	Q_{gd}			15.1		
Gate Charge Total	Q_g			64.2		
Gate Plateau Voltage	$V_{plateau}$			4.9		V
Gate Charge Total, sync FET	Q_g	$V_{DD}=0.1V, V_{GS}=0 \text{ to } 10V$		53.7		nC
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=60A$		0.87	1.1	V
Reverse Recovery Time	t_{rr}	$V_R=75V, I_F=60A, dI_F/dt=100A/\mu s$		28		nS
Reverse Recovery Charge	Q_{rr}			27		nC
Peak Reverse Recovery Current	I_{rrm}			1.9		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 90V
- $C_{O(tr)}$ is a fixed capacitance that gives the same charging time as C_{OSS} while V_{DS} is rising from 0 to 90V



Sanrise Technology Limited Company

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