

General Description

The Sanrise SRT045N025H 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 SRT045N025H break down voltage is 45V and it has a high rugged avalanche characteristics. The SRT045N025H is available in PDFN5*6 package.

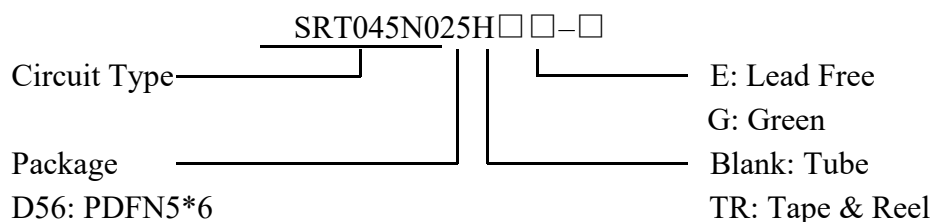
Features

- Ultra Low $R_{DS(ON_TYP)} = 2.15m\Omega @V_{GS} = 10V$.
- Ultra Low Gate Charge, $Q_g=32nC$ typ.
- Fast switching capability
- Robust design with better EAS performance
- EMI Improved
- Non-automotive Qualified

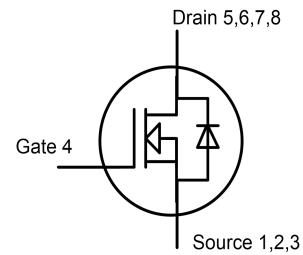
Application

- Server/Telecom
- High Power Supply
- E-Tools
- Motor Driver
- BMS

Ordering Information



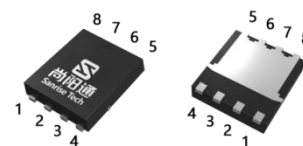
Symbol



PDFN5*6

Figure 1 Symbol of SRT045N025H

Package Type



PDFN5*6

Figure 2 Package Type of SRT045N025H

Package	Part Number	Marking ID	Packing Type
PDFN5*6	SRT045N025HD56TR-G	SRT045N025HD56G	Tape & Reel

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	45	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current, Silicon	I_D	$T_C=25^{\circ}C$	129
		$T_C=100^{\circ}C$	81.5
Pulsed Drain Current (Note 2)	I_{DM}	516	A
Power Dissipation ($T_C = 25^{\circ}C$)	P_D	78	W
Avalanche Destructive Energy, Single Pulse (Note 5)	E_{AS_Limit}	225	mJ
Avalanche Energy, Single Pulse (Note 4)	E_{AS}	36	mJ
Avalanche Energy, Repetitive (Note 2)	E_{AR}	0.2	mJ
Avalanche Current, Repetitive (Note 2)	I_{AR}	20.0	A
Continuous Diode Forward Current	I_S	80	A
Diode Pulse Current	$I_{S,PULSE}$	240	A
Operating Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Lead Temperature (Soldering, 10 sec)	T_{LEAD}	260	°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
- $I_{AS} = 12A$, $V_{DD} = 20V$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}C$
- $I_{AS_Limit} = 30.0A$, $V_{DD} = 20V$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}C$

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}			1.6	°C/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}			50	

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}	$V_{GS}=0V, I_D=250\mu A$	45			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=45V, V_{GS}=0V$			1	μA
Gate-Body Leakage Current	Forward	$I_{GSSF}, V_{GS}=20V, V_{DS}=0V$			200	nA
	Reverse	$I_{GSSR}, V_{GS}=-20V, V_{DS}=0V$			-200	
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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=35A$		2.15	2.5	$m\Omega$
Gate Resistance	R_G	$f=1MHz, \text{Open Drain}$		1.2		Ω
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		2.3		nF
Output Capacitance	C_{OSS}			762		pF
Reverse Transfer Capacitance	C_{RSS}			48		pF
Effective output capacitance, energy related <small>NOTE5</small>	$C_{O(er)}$	$V_{GS}=0V, V_{DS}=0\dots 20V$		1.2		nF
Effective output capacitance, time related <small>NOTE6</small>	$C_{O(tr)}$			1.5		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=20V, I_D=35A, R_G=1.6\Omega, V_{GS}=10V$		8		ns
Rise Time	t_r			29		
Turn-off Delay Time	$t_{d(off)}$			31		
Fall Time	t_f			7		
Gate Charge Characteristics						
Gate to Source Charge	Q_{gs}	$V_{DD}=20V, I_D=35A, V_{GS}=0 \text{ to } 10V$		10.2		nC
Gate to Drain Charge	Q_{gd}			5.2		
Gate Charge Total	Q_g			32		
Gate Plateau Voltage	$V_{plateau}$			5.0		V
Gate Charge Total, sync FET	Q_g	$V_{DD}=0.1V, V_{GS}=0 \text{ to } 10V$		29		nC
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=35A$		0.84	1.0	V
Reverse Recovery Time	t_{rr}	$V_R=20V, I_F=35A, dI_F/dt=100A/\mu s$		52		ns
Reverse Recovery Charge	Q_{rr}			91		nC
Peak Reverse Recovery Current	I_{rrm}			3.5		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 32V
- $C_{O(tr)}$ is a fixed capacitance that gives the same charging time as C_{OSS} while V_{DS} is rising from 0 to 32V



Sanrise Technology Limited Company

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