

TSK107N20

200V N-Channel MOSFET

General Description

The 107N20 uses advanced SGT technology to provide excellent RDS(ON). This device is ideal for high-frequency switching and synchronous rectification.

Features

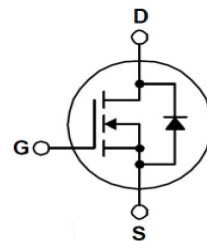
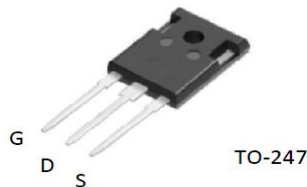
- 110A, 200V, Max. RDS(on)=10mΩ @ VGS =10V

Applications

- Motor control and drive
- Battery management
- Uninterruptible Power Supply

Features

- Low on-resistance
- Low Gate Charge
- 100% avalanche tested
- RoHS Compliant



Absolute Maximum Ratings

T_C=25°C unless otherwise specified

Symbol	Parameter		Value	Units
V _{DSS}	Drain-Source Voltage		200	V
V _{GS}	Gate-Source Voltage		± 20	V
I _D	Drain Current	T _C = 25°C	110	A
		T _C = 100°C	71	A
I _{DM}	Pulsed Drain Current		440	A
E _{AS}	Single Pulsed Avalanche Energy ¹		2531	mJ
P _D	Power Dissipation (T _C = 25°C)		330	W
T _J , T _{STG}	Operating and Storage Temperature Range		-55 to +150	°C

Thermal Resistance Characteristics

Symbol	Parameter	Rating	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	0.38	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	45	°C/W

Electrical Characteristics $T_c=25\text{ }^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$	2.0	--	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}$, $I_D = 50\text{ A}$	--	8.2	10	m Ω
g_{fs}	Forward transfer conductance	$V_{DS} = 10\text{ V}$, $I_D = 20\text{ A}$	--	46	--	S

Off Characteristics

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{ V}$, $I_D=250\mu\text{A}$	200	--	--	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=200\text{ V}$, $V_{GS}=0\text{ V}$	--	--	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20\text{ V}$, $V_{DS}=0\text{ V}$	--	--	± 100	nA

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}$, $V_{GS} = 0\text{ V}$, $f = 1\text{ MHz}$	--	5300	--	pF
C_{oss}	Output Capacitance		--	3100	--	pF
C_{rss}	Reverse Transfer Capacitance		--	140	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Time	$V_{DS}=100\text{ V}$ $V_{GS}=10\text{ V}$ $I_D=50\text{ A}$ $R_G=2.7\Omega$	--	35	--	ns
t_r	Turn-On Rise Time		--	111	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	84	--	ns
t_f	Turn-Off Fall Time		--	112	--	ns
Q_g	Total Gate Charge	$I_D = 60\text{ A}$, $V_{DS}=100\text{ V}$ $V_{GS} = 10\text{ V}$	--	74	--	nC
Q_{gs}	Gate-Source Charge		--	30	--	nC
Q_{gd}	Gate-Drain Charge		--	16	--	nC

Source-Drain Diode Maximum Ratings and Characteristics

I_S	Continuous Source-Drain Diode Forward Current	$V_G=V_D=0\text{ V}$, Force Current	--	--	110	A
I_{SM}	Pulsed Source-Drain Diode Forward Current		--	--	440	
V_{SD}	Source-Drain Diode Forward Voltage	$I_F = 50\text{ A}$, $V_{GS} = 0\text{ V}$, $T_J=25^{\circ}\text{C}$	--	0.82	1.4	V

NOTES:

1.The EAS data shows Max. rating . The test condition is $V_{DS}=80\text{ V}$, $V_{GS}=10\text{ V}$, $L=10\text{ mH}$, $I_{AS}=22.5\text{ A}$.

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Typical Characteristics

