

TSSA30DN06

60V N-Channel MOSFET

General Description

The TSSA30DN06 uses advanced trench technology to provide excellent RDS (ON). This device is suitable for use in high performance automotive applications.

Features

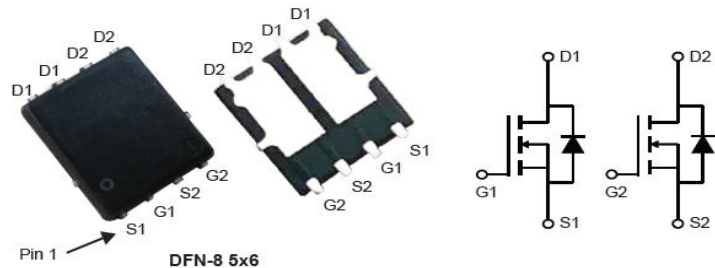
30A, 60V, Max. RDS(on) = 16mΩ
@ VGS = 10V

Applications

- Switching applications
- Motor Drive
- Automotive

Features

- Dual N-Channel MOSFET
- 100% avalanche tested
- Small Footprint (5x6mm) for Compact Design
- RoHS Compliant



Absolute Maximum Ratings Tc=25°C unless otherwise specified

Symbol	Parameter		Value	Units
V _{DSS}	Drain-Source Voltage		60	V
V _{GS}	Gate-Source Voltage		± 20	V
I _D	Drain Current	T _C = 25°C	30	A
		T _C = 100°C	21	A
I _{DM}	Pulsed Drain Current		120	A
E _{AS}	Single Pulsed Avalanche Energy ¹		76	mJ
P _D	Power Dissipation (T _C = 25°C)		50	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 Max.	2.5	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient Max.	50	°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	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1.0	--	3.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 15\text{ A}$	--	14	16	m Ω
		$V_{GS} = 4.5\text{ V}, I_D = 10\text{ A}$	--	15	20	
g_{fs}	Forward transfer conductance	$V_{DS} = 5\text{ V}, I_D = 10\text{ A}$	--	23	--	S
R_g	Gate Resistance	$V_{DS}=0\text{ V}, V_{GS}=0\text{ V}, f=1\text{ MHz}$	--	2	--	Ω

Off Characteristics

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{ V}, I_D=250\mu\text{A}$	60	--	--	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60\text{ V}, V_{GS}=0\text{ V}$	--	--	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	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1\text{ MHz}$	--	2500	--	pF
C_{oss}	Output Capacitance		--	120	--	pF
C_{rss}	Reverse Transfer Capacitance		--	100	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Time	$V_{DD}=30\text{ V}, V_{GEN}=10\text{ V}, R_G=1\Omega$ $R_L=0.75\Omega, I_D=30\text{ A}$	--	8	--	ns
t_r	Turn-On Rise Time		--	13	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	22	--	ns
t_f	Turn-Off Fall Time		--	10	--	ns
Q_g	Total Gate Charge	$I_D = 30\text{ A},$ $V_{DD}=30\text{ V}$ $V_{GS} = 10\text{ V}$	--	34	--	nC
Q_{gs}	Gate-Source Charge		--	6	--	nC
Q_{gd}	Gate-Drain Charge		--	8.5	--	nC

Source-Drain Diode Maximum Ratings and Characteristics

I_S	Diode continuous forward current	$V_G=V_D=0\text{ V},$ Force Current	--	--	30	A
$I_{S,pulse}$	Diode pulse current		--	--	120	
V_{SD}	Diode Forward Voltage	$V_{GS}=0\text{ V}, I_S=10\text{ A}, T_j=25\text{ }^{\circ}\text{C}$	--	0.83	1.25	V

NOTES:

The EAS data shows Max. rating .The test condition is $V_{DD}=30\text{ V}, V_{GS}=10\text{ V}, L=0.5\text{ mH}, I_{AS}=17.5\text{ A}$.

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Typical Characteristics

