

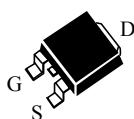
N-Channel High Density Trench MOSFET

PRODUCT SUMMARY

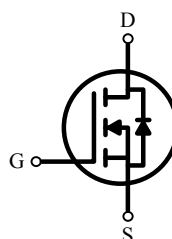
V_{DSS}	I_D	$R_{DS(on)}$ (m-ohm) Max
25V	80A ^c	6 @ $V_{GS} = 10V$
		9 @ $V_{GS} = 4.5V$

FEATURES

- Super high dense cell trench design for low $R_{DS(on)}$.
- Rugged and reliable.
- Improved Shoot-Through FOM.
- Fully Characterized Avalanche Voltage and Current.



To-252(D-PAK)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	25	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ^c	I_D	$T_C=25^{\circ}\text{C}$ 80	A
		$T_C=100^{\circ}\text{C}$ 50	
Drain Current-Pulse	I_{DM}	150	A
Drain-Source Diode Forward Current	I_S	20	A
Maximum Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$ 54.3	W
		$T_C=100^{\circ}\text{C}$ 21.7	
		$T_A=25^{\circ}\text{C}$ ^{a,b} 8.9	
		$T_A=100^{\circ}\text{C}$ ^{a,b} 3.6	
Avalanche Energy with Single Pulse $L=0.1\text{mH}$	E_{AS}	45	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to 150	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	Steady-State	R_{thJC}	2.3	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Ambient ^a	Steady-State	R_{thJA}	70	$^{\circ}\text{C/W}$
	$t \leq 10S$		14	

Note :

a. Surface Mounted on 1"x1" FR4 Board.

b. $t = 10\text{ sec}$

c. Calculation based on maximum allowable Junction Temperature . Package limitation current is 40A.

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V , I _D = 250uA	25			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 25V , V _{GS} = 0V			1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} = ±20V , V _{DS} = 0V			±100	nA
ON CHARACTERISTICS ^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.8	3	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V , I _D = 30A		4	6	m-ohm
		V _{GS} = 4.5V , I _D = 30A		6	9	m-ohm
Forward Transconductance	g _{fs}	V _{DS} = 15V , I _D = 15A		22		S
DRAIN-SOURCE DIODE CHARACTERISTICS ^b						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V , I _s = 20A		0.85	1.3	V
DYNAMIC CHARACTERISTICS ^c						
Input Capacitance	C _{ISS}	V _{DS} = 15V , V _{GS} = 0V f = 1.0MHz		2054		pF
Output Capacitance	C _{OSS}			395		pF
Reverse Transfer Capacitance	C _{RSS}			235		pF
SWITCHING CHARACTERISTICS ^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 12V , I _D = 20A V _{GEN} = 10V R _L = 0.6 ohm R _{GEN} = 6 ohm		13.2		ns
Rise Time	t _r			7.20		ns
Turn-Off Delay Time	t _{D(OFF)}			44.8		ns
Fall Time	t _f			16		ns
Total Gate Charge	Q _g	V _{DS} = 12V , I _D = 20A V _{GS} = 10V		32.7		nC
		V _{DS} = 12V		15.4		nC
Gate-Source Charge	Q _{gs}	I _D = 20A		7.12		nC
Gate-Drain Charge	Q _{gd}	V _{GS} = 4.5V		5.20		nC

Note :

b. Pulse Test : Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

c. Guaranteed by design, not subject to production testing.