Microsemi

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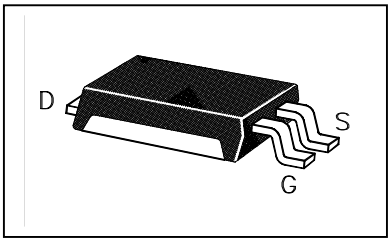
UPF1N100

PRELIMINARY

SURFACE MOUNT N – CHANNEL MOSFET

Features

- **Rugged POWERMITE 3® Surface Mount Package**
- **Low On-State Resistance**
- **Avalanche and Surge Rated**
- **High Frequency Switching**
- **Ultra Low Leakage current**
- **UIS rated**
- **Available with Lot Acceptance Testing**

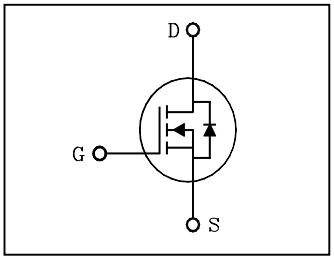


Description

This device is an N-Channel enhancement mode, high density MOSFET. It is passivated with 4 um (40 kA) of oxynitride, and supplied in a three leaded package.

Maximum Ratings

PARAMETER	SYMBOL	VALUE	UNIT
Drain-to-Source Voltage	V_{DSS}	1000	Volts
Gate- to -Source Voltage	V_{GS}	+/- 20	Volts
Continuous Drain Current @ TC = 25°C	I_{D1}	1.0	Amps
Continuous Drain Current @ TC=100°C	I_{D2}	0.27	Amps
Avalanche Current	I_{AR}	1.0	Amps
Repetitive Avalanche Energy	E_{AR}	3.5	mJ
Single Pulse Avalanche Energy	E_{AS}	120	mJ
Operating & Storage Junction Temperature Range	T_J, T_{STG}	- 40 to +125	°C
Steady-state Thermal Resistance, Junction-to-Tab	$R\theta_{J\text{-}TAB}$	2.5	°C/Watt



Static Electrical Characteristics

SYMBOL	CHARACTERISTICS / TEST CONDITIONS	MIN	TYP	MAX	UNIT
BV_{DSS}	Drain to Source Breakdown Voltage (VGS=0V, ID=0.25mA)	1000			Volts
$V_{GS(TH)2}$	Gate Threshold Voltage (VGS=VDS, ID=1mA, TJ=37°C)		3.4		Volts
$V_{GS(TH)1}$	Gate Threshold Voltage (VGS=VDS, ID=1mA, TJ=25°C)	2	3.5	4.5	Volts
$R_{DS(ON)1}$	Drain to Source ON-State Resistance (VGS=10V, ID=ID 1, TJ=25°C)		12.5	13.5	Ohms
$R_{DS(ON)2}$	Drain to Source ON-State Resistance (VGS=7V, ID=5…150ma, TJ=37°C)		12.5		Ohms
$R_{DS(ON)3}$	Drain to Source ON-State Resistance (VGS=7V, ID=5…150ma, TJ=25°C)		11.5		Ohms
$R_{DS(ON)4}$	Drain to Source ON-State Resistance (VGS=7V, ID=5…150ma, TJ=60°C)		15.0		Ohms
$R_{DS(ON)5}$	Drain to Source ON-State Resistance (VGS=7V, ID=ID 1, TJ=125°C)		25.5		Ohms
I_{DSS1}	Zero Gate Voltage-Drain Current (VDS=80%BVDSS,VGS=0V,TJ= 25°C)			25	uA
I_{DSS2}	Zero Gate Voltage-Drain Current (VDS=80%BVDSS,VGS=0V,TJ=125°C)			250	uA
I_{GSS1}	Gate to Source Leakage Current (VGS= ±20V, VDS=0V, TJ = 25°C)			±100	nA
I_{GSS2}	Gate to Source Leakage Current (VGS= ±20V, VDS=0V, TJ = 37°C)		10.0		nA
I_{GSS3}	Gate to Source Leakage Current (VGS= ±20V, VDS=0V, TJ=125°C)			25	uA

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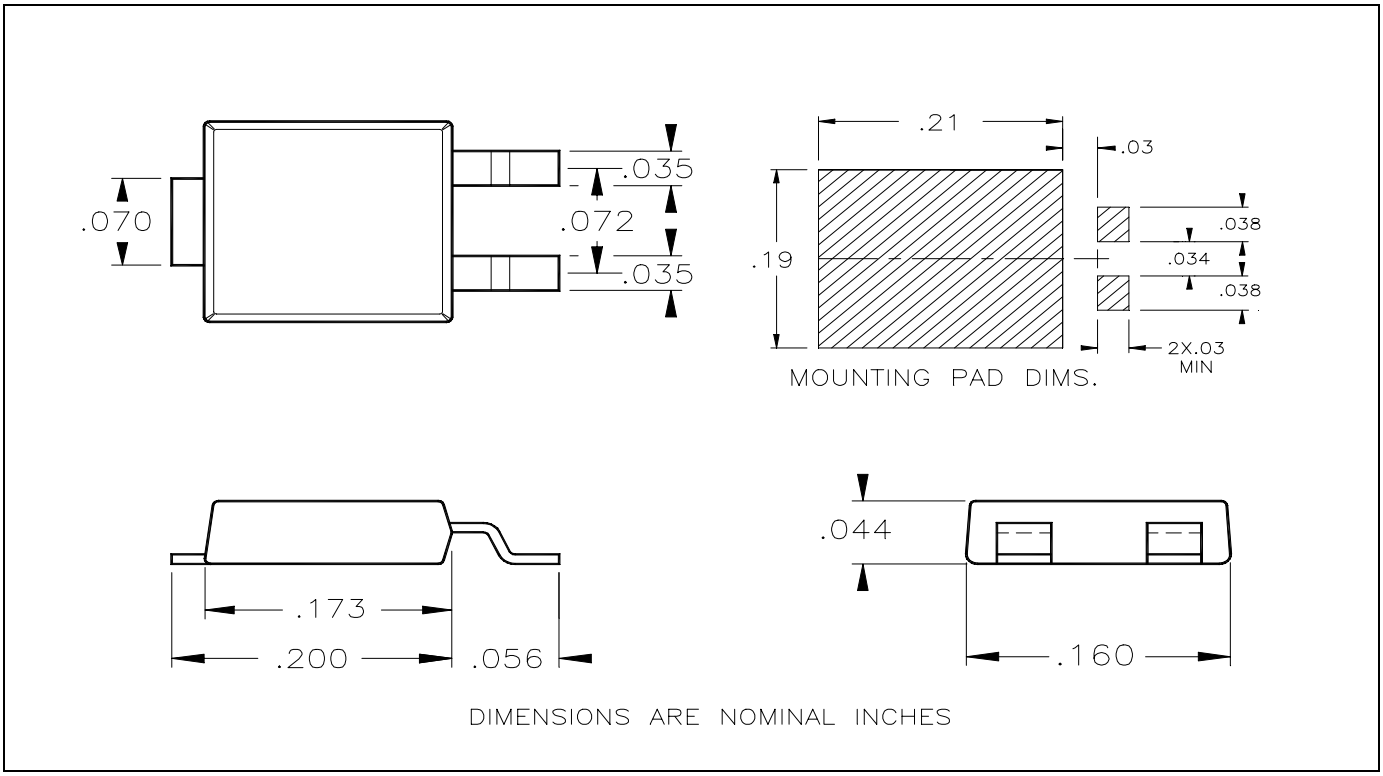
Dynamic Electrical Characteristics

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Ciss	Input Capacitance	V_{GS}= 0 V		290	375	pF
Coss	Output Capacitance	V_{DS}= 25 V		36	50	pF
Crss	Reverse Transfer Capacitance	f = 1MH$_Z$		15	30	pF
Qg	Total Gate Charge	V_{GS}= 10 V		20		nC
Qgs	Gate to Source Charge	V_{DS}= 0.5 V_{DSS}		1.0		nC
Qgd	Gate to Drain Charge	I_C= 20 mA		10		nC
td (on)	Turn-ON Delay Time	Resistive Switching (25°C)		6.3		ns
t r	Rise Time	V_{GS}= 10 V, V_{DS}= 0.5 BV_{DSS}		5.9		ns
td	Turn-OFF Delay Time	I_D = 20 mA		315		ns
t f	Fall Time	Rg = 1.6 Ω		2.6		us
td (on)	Turn-ON Delay Time	Resistive Switching (25°C)		6.3		ns
t r	Rise Time	V_{GS}= 10 V, V_{DS}= 0.5 BV_{DSS}		5.8		ns
td (off)	Turn-OFF Delay Time	I_D = 100 mA		76		ns
t f	Fall Time	Rg = 1.6 Ω		470		ns
V_{SD}	Diode Forward Voltage	V_{GS}= 0 V, I_S = 1 A, T_J = 37°C		0.825	1.0	V
t rr	Reverse Recovery Time	I_S = 1 A, dIs/dt = 100 A/us		121	300	ns
Qrr	Reverse Recovery Charge	I_S = 1 A, dIs/dt = 100 A/us		0.415	0.8	uC



MECHANICAL SPECIFICATIONS