

Features

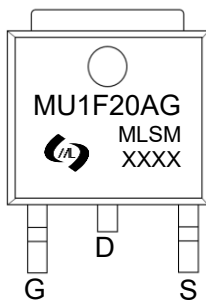
- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Split gate trench MOSFET technology
- Fast switching and soft recovery

Application

- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
150V	100m Ω @10V	20A
	115m Ω @6V	

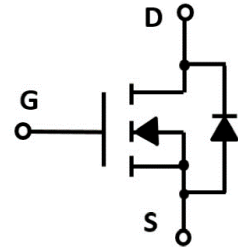


Marking and pin assignment

MU1F20AG: Device code
 XXXX : Code



TO-252 view



Schematic diagram



Pb-Free



RoHS



Halogen-Free

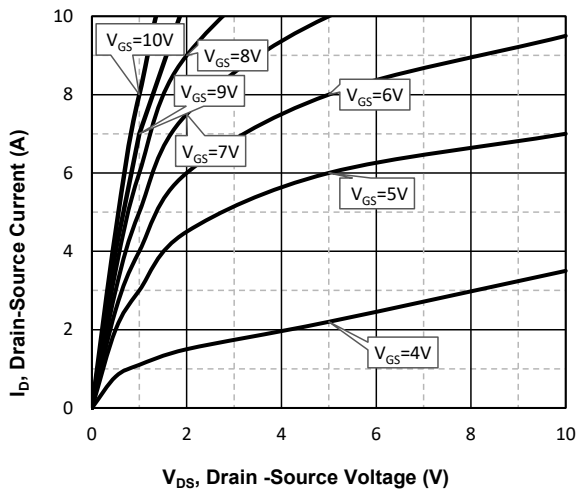
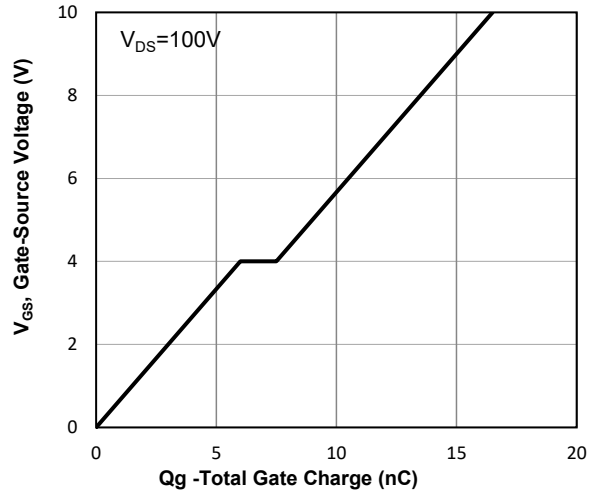
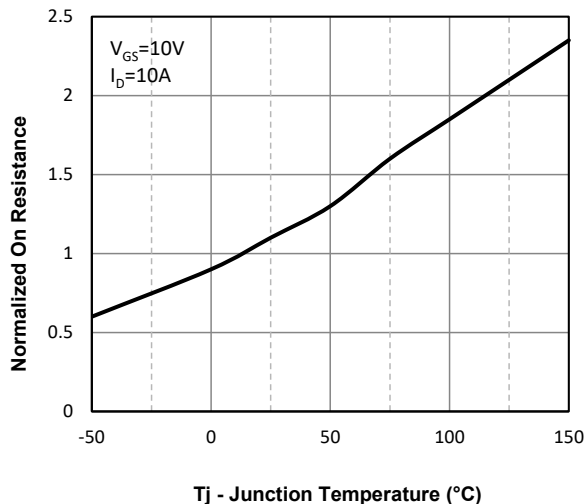
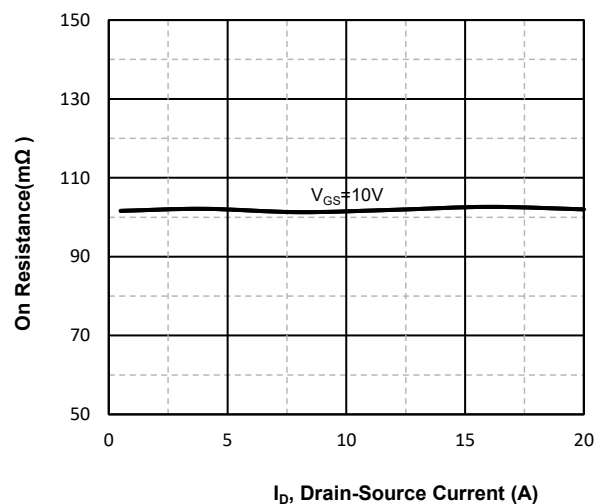
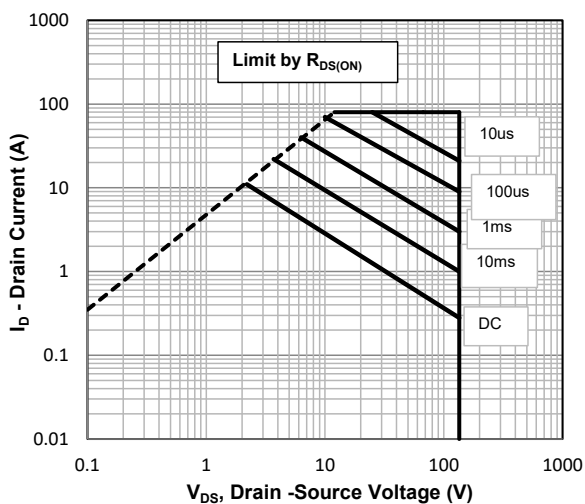
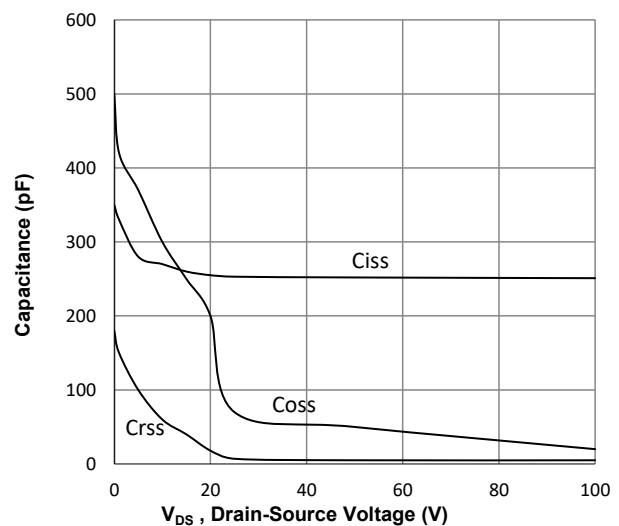
Absolute Maximum Ratings (TA=25°C unless otherwise noted)

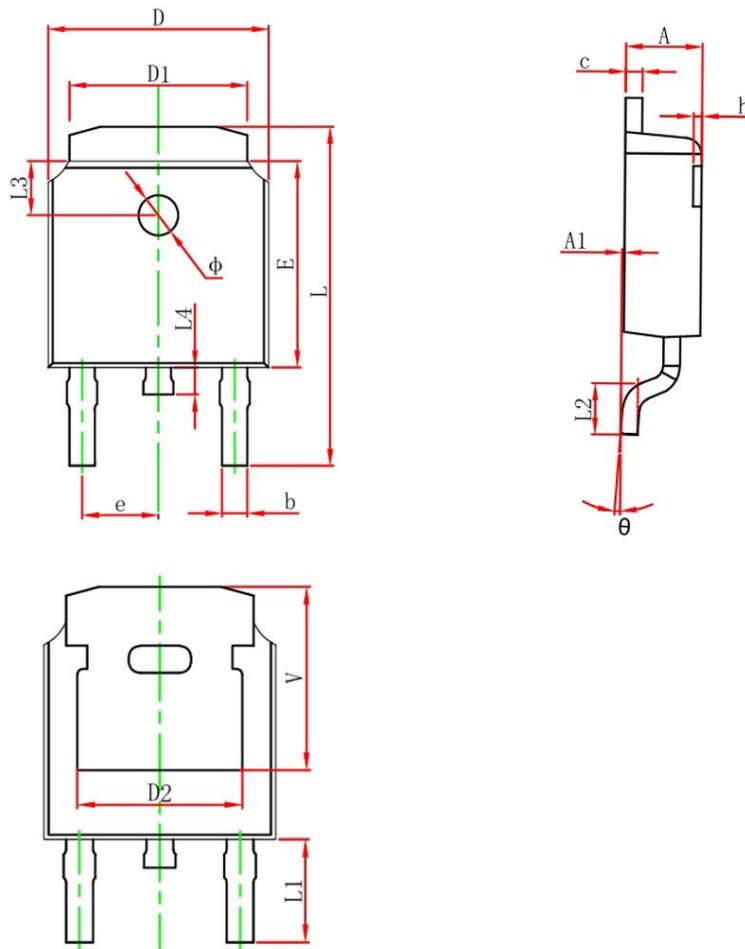
Symbol	Parameter	Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)			
V_{DS}	Drain-Source Breakdown Voltage	150	V
V_{GS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-50 to 155	°C
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 20	A
Mounted on Large Heat Sink			
I_{DM}	Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 80	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$ 20	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 36	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	62.5	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MU1F20AG	TO-252	MU1F20AG	2,500	5,000	35,000	13"reel

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	135	150	–	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =120V, V _{GS} =0V	–	–	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	–	–	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2	2.5	3.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =10A	–	100	130	mΩ
		V _{GS} =6V, I _D =5A	–	115	160	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =60V, V _{GS} =0V, f=1MHz	–	265	–	pF
C _{OSS}	Output Capacitance		–	35	–	pF
C _{RSS}	Reverse Transfer Capacitance		–	3	–	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =100V, I _D =10A, V _{GS} =10V	–	16.3	–	nC
Q _{gs}	Gate Source Charge		–	6	–	nC
Q _{gd}	Gate Drain Charge		–	2.2	–	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V, I _D =9A, V _{GS} =10V, R _G =12Ω	–	6.5	–	nS
t _r	Turn-on Rise Time		–	27	–	nS
t _{d(off)}	Turn-Off Delay Time		–	35	–	nS
t _f	Turn-Off Fall Time		–	25	–	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =10A	–	–	1.2	V

Typical Operating Characteristics

Fig1. Typical Output Characteristics

Fig2. Typical Gate Charge Vs. Gate-Source Voltage

Fig3. Normalized On-Resistance Vs. Temperature

Fig4. On-Resistance Vs. Drain-Source Current

Fig5. Maximum Safe Operating Area

Fig6. Typical Capacitance Vs. Drain-Source Voltage

TO-252 Package information


Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.450	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.386	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	