

Features

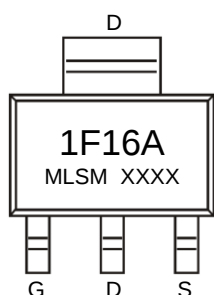
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
150V	52mΩ@10V	16A
	60mΩ@4.5V	

Application

- Power switching application

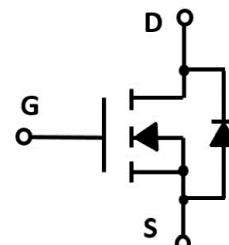


1F16A : Device code
 XXXX : Code

Marking and pin assignment



SOT-223 top view



Schematic diagram



Halogen-Free

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

Symbol	Parameter	Rating	Unit
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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	$T_C=25^{\circ}C$ 16	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_C=25^{\circ}C$ 80	A
I_D	Continuous Drain Current	$T_C=25^{\circ}C$ 16	A
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$ 1.5	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	108	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MT1F16A	SOT-223	1F16A	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 @ TJ = 25°C (unless otherwise stated)						
BV(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	150	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=150V, VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.0	--	3.0	V
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=10A	--	52	63	mΩ
		VGS=4.5V, ID=5A	--	60	77	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
CISS	Input Capacitance	VDS=75V, VGS=0V, f=1MHz	--	750	--	pF
COSS	Output Capacitance		--	65	--	pF
CRSS	Reverse Transfer Capacitance		--	5	--	pF
Switching Characteristics						
Qg	Total Gate Charge	VDS=75V, ID=10A, VGS=10V	--	16	--	nC
Qgs	Gate Source Charge		--	3	--	nC
Qgd	Gate Drain Charge		--	4	--	nC
td(on)	Turn-on Delay Time	VDD=75V, ID=10A, VGS=10V, RG=2.2Ω	--	7	--	nS
tr	Turn-on Rise Time		--	20	--	nS
td(off)	Turn-Off Delay Time		--	16	--	nS
tf	Turn-Off Fall Time		--	14	--	nS
Source- Drain Diode Characteristics						
VSD	Forward on voltage	Tj=25°C, Is=10A	--	--	1.2	V

Typical Operating Characteristics

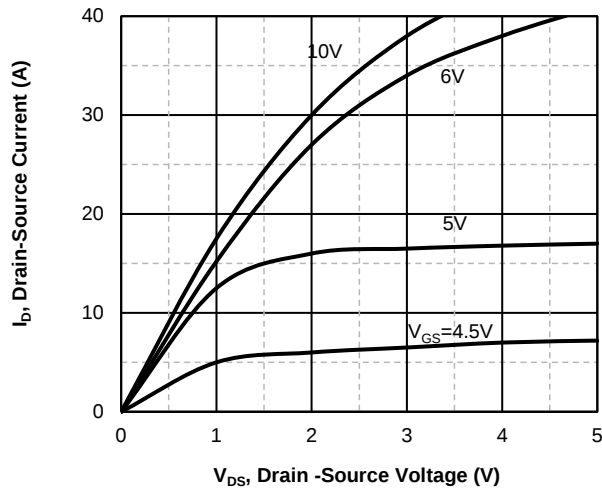


Fig1. Typical Output Characteristics

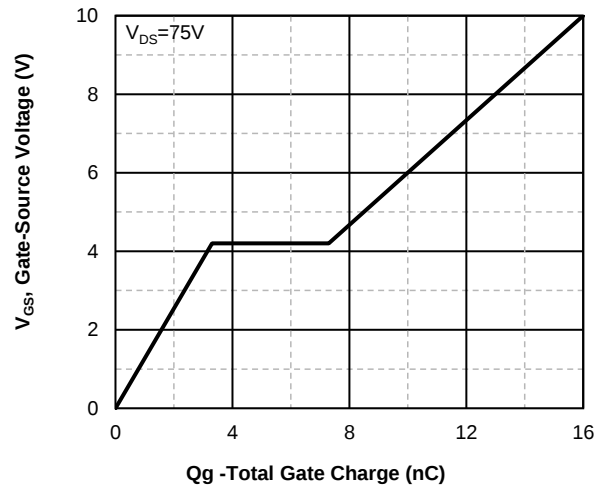


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

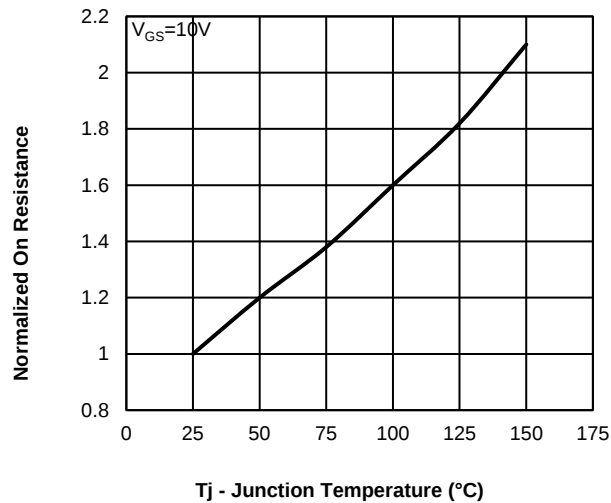


Fig3. Normalized On-Resistance Vs. Temperature

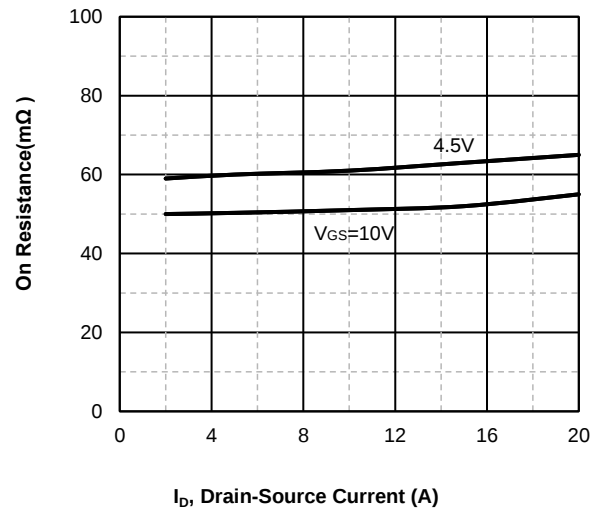


Fig4. On-Resistance Vs. Drain-Source Current

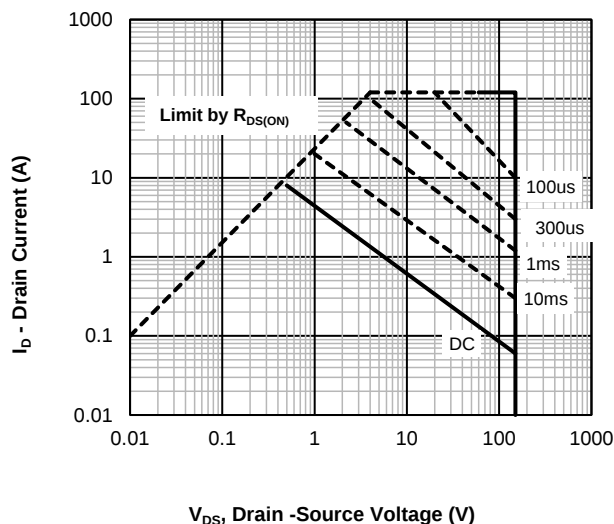


Fig5. Maximum Safe Operating Area

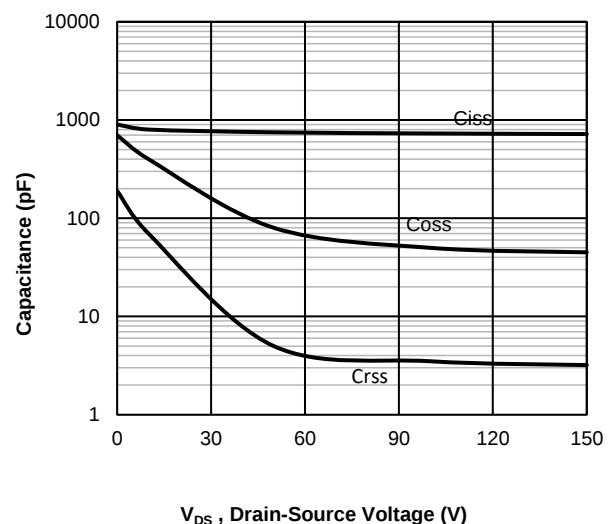
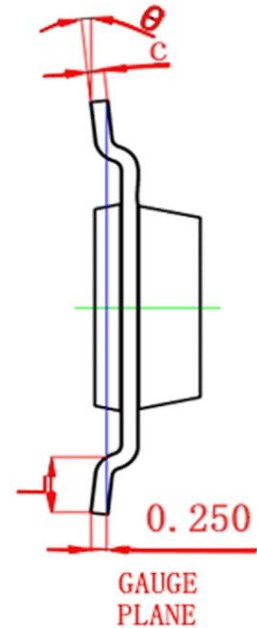
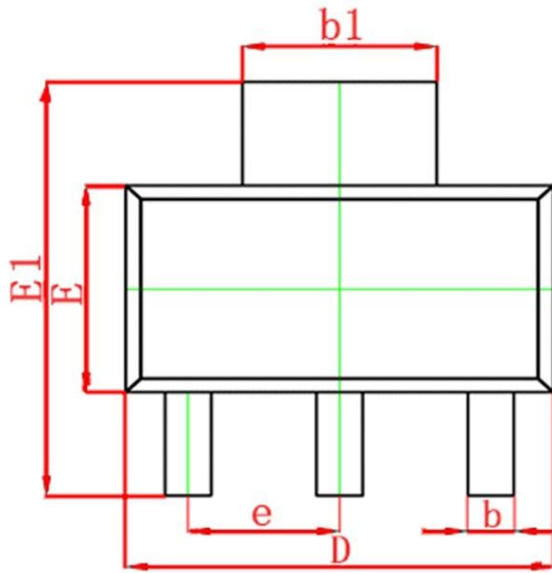


Fig6 Typical Capacitance Vs. Drain-Source

SOT-223 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	--	1.800	--	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	3.300	3.700	0.130	0.146
E1	6.700	7.300	0.264	0.287
e	2.300(BSC)		0.091(BSC)	
L	0.750	--	0.030	--
θ	0°	10°	0°	10°