100V N-Ch Power MOSFET

Feature

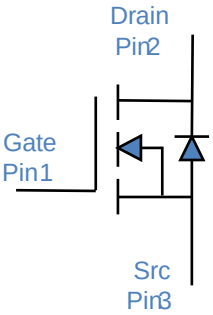
- High Speed Power Switching, Logic Level
- Enhanced Body diode dv/dt capability
- Enhanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested
- Lead Free, Halogen Free

V_{DS}		100	V
$R_{DS(on),typ}$	V_{GS}=10V	9.0	mΩ
R	V_{GS}=4.5V	11	mΩ
$I_{D\ (Sillicon\ Limited)}$		37.7	A

Application

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- DC/DC in Telecoms and Inductrial

TO-220F



Part Number	Package	Marking
HGA110N10SL	TO-220F	GA110N10SL

Absolute Maximum Ratings at T_j=25 (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C=25 T_C=100	38 27	A
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	140	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C=25	22	mJ
Power Dissipation	P_D	T_C=25	33	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	60	/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	4.5	/W

Electrical Characteristics at T_j=25 (unless otherwise specified)

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1.4	1.9	2.4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=100V, T_j=25	-	-	1	μA
		V_{GS}=0V, V_{DS}=100V, T_j=100	-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	-	9	11	mΩ
		V_{GS}=4.5V, I_D=20A	-	11	14	
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	60	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.5	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	2275	-	pF
Output Capacitance	C_{oss}		-	162	-	
Reverse Transfer Capacitance	C_{rss}		-	7.9	-	
Total Gate Charge	Q_g(10V)	V_{DD}=50V, I_D=14A, V_{GS}=10V	-	29	-	nC
Total Gate Charge	Q_g(4.5V)		-	14	-	
Gate to Source Charge	Q_{gs}		-	5	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	5	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=50V, I_D=14A, V_{GS}=10V, R_G=10Ω,	-	8	-	ns
Rise time	t_r		-	3	-	
Turn off Delay Time	$t_{d(off)}$		-	26	-	
Fall Time	t_f		-	4	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=20A	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	V_R=50V, I_F=12A, dI_F/dt=500A/μs	-	33	-	ns
Reverse Recovery Charge	Q_{rr}		-	157	-	nC

Fig 1. Typical Output Characteristics	Figure 2. On-Resistance vs. Gate-Source Voltage

Figure 3. On-Resistance vs. Drain Current and Gate Voltage	Figure 4. Normalized On-Resistance vs. Junction Temperature

Figure 5. Typical Transfer Characteristics	Figure 6. Typical Source-Drain Diode Forward Voltage

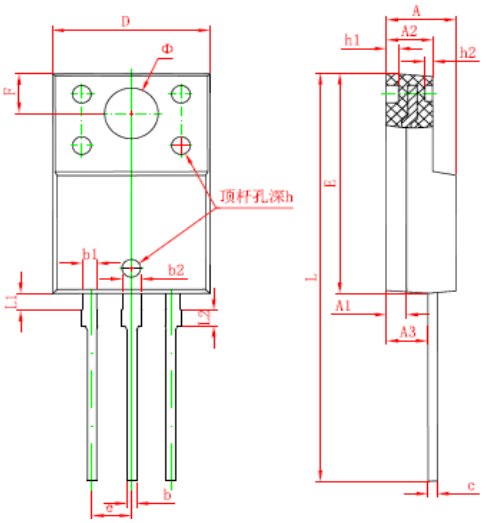
rge vs. Gate-to-Source Voltage

g A

Figure 11. Norma iction-to-Ambient

Package Outline

TO-220F, 3 leads



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.350	4.650	0.169	0.185
A1	1.300 REF.		0.051 REF.	
A2	2.850	3.150	0.112	0.124
A3	2.600	2.800	0.102	0.110
b	0.500	0.750	0.020	0.030
b1	0.800	1.050	0.031	0.041
b2	1.200	1.450	0.047	0.057
0.030	c	0.500	0.750	0.020
0.408	D	9.960	10.360	0.392
0.598	E	14.800	15.200	0.583
YP.	e	2.540 TYP.		0.100
EF.	F	2.700 REF.		0.106 R
EF.	Φ	3.500 REF.		0.138 R
0.012	h	0.000	0.300	0.000
EF.	h1	0.800 REF.		0.031 R
EF.	h2	0.500 REF.		0.020 R
1.118	L	28.000	28.400	1.102
0.051	L1	1.100	1.300	0.043
0.043	L2	0.920	1.080	0.036