

# HF3710T

## 100V N-Channel MOSFET

### FEATURES

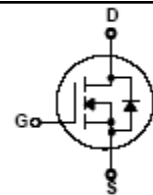
- ❑ Originative New Design
- ❑ Superior Avalanche Rugged Technology
- ❑ Robust Gate Oxide Technology
- ❑ Very Low Intrinsic Capacitances
- ❑ Excellent Switching Characteristics
- ❑ Unrivalled Gate Charge : 22 nC (Typ.)
- ❑ Extended Safe Operating Area
- ❑ Lower  $R_{DS(ON)}$  : 0.0110  $\Omega$  (Typ.) @ $V_{GS}=10V$
- ❑ 100% Avalanche Tested

$$BV_{DSS} = 100V$$

$$R_{DS(on) \text{ typ}} = 0.011 \Omega$$

**TO-220F**


1.Gate 2. Drain 3. Source



### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain-Source Voltage	100	V
$I_D$	Drain Current – Continuous ( $T_C = 25^\circ\text{C}$ )	50	A
	Drain Current – Continuous ( $T_C = 100^\circ\text{C}$ )	30A	A
$I_{DM}$	Drain Current – Pulsed (Note 1)	230	A
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$E_{AS}$	Single Pulsed Avalanche Energy (Note 2)	230	mJ
$I_{AR}$	Avalanche Current (Note 1)	28	A
$E_{AR}$	Repetitive Avalanche Energy (Note 1)	20	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3)	5.8	V/ns
$P_D$	Power Dissipation ( $T_C = 25^\circ\text{C}$ ) – Derate above $25^\circ\text{C}$	200	W
		1.3	W/ $^\circ\text{C}$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$T_L$	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	$^\circ\text{C}$

### Thermal Resistance Characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	--	0.85	$^\circ\text{C}/\text{W}$
$R_{\theta CS}$	Case-to-Sink	0.5	--	
$R_{\theta JA}$	Junction-to-Ambient	--	62.5	

**N-Channel 100V(D-S) MOSFET**
**Absolute Maximum Ratings** ( $T_c=25^{\circ}\text{C}$  Unless Otherwise Noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V

**Electrical Characteristics** ( $T_j=25^{\circ}\text{C}$  Unless Otherwise Specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>STATIC</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$			1	$\mu A$
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=11.5A$		11	14	$m\Omega$
$V_{SD}$	Diode Forward Voltage	$I_S=1A, V_{GS}=0V$		0.6	1	V
<b>DYNAMIC</b>						
$Q_g$	Total Gate Charge	$V_{DS}=50V, V_{GS}=10V, I_D=11.5A$		40		nC
$Q_{gs}$	Gate-Source Charge			9.4		
$Q_{gd}$	Gate-Drain Charge			6		
$C_{iss}$	Input capacitance	$V_{DS}=30V, V_{GS}=0V, f=1.0MHz$		2071		pF
$C_{oss}$	Output Capacitance			704		
$C_{rss}$	Reverse Transfer Capacitance			28		
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=50V, R_L=4.35\Omega$ $V_{GS}=10V, R_G=3\Omega$ $I_D=11.5A$		19.5		ns
$t_r$	Turn-On Rise Time			37.6		
$t_{d(off)}$	Turn-Off Delay Time			41		
$t_f$	Turn-Off Fall Time			13		
$T_{rr}$	Reverse Recovery Time	$I_D=11.5A, V_{GS}=0V, di/dt=100A/\mu s$		43		ns
$Q_{rr}$	Reverse Recovery Charge			56		nC

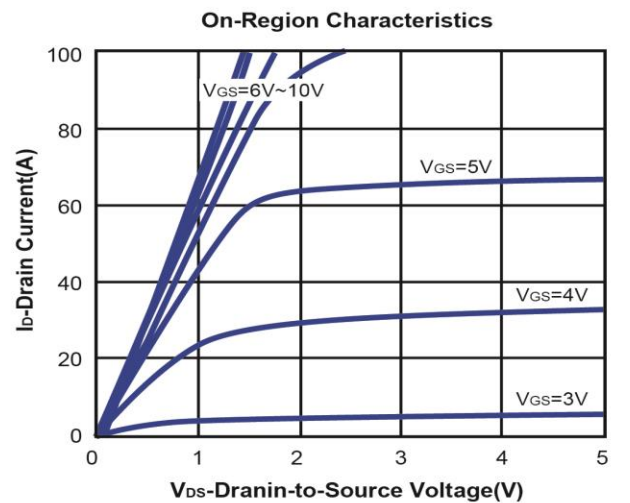
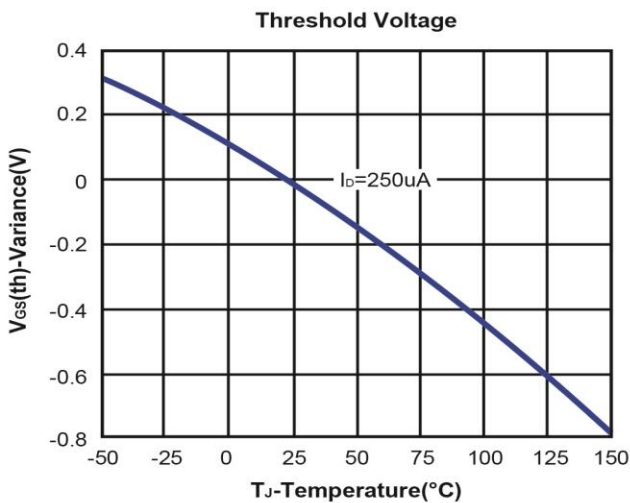
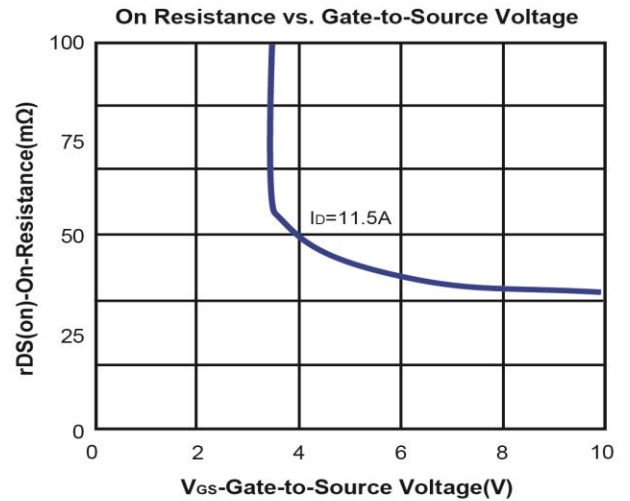
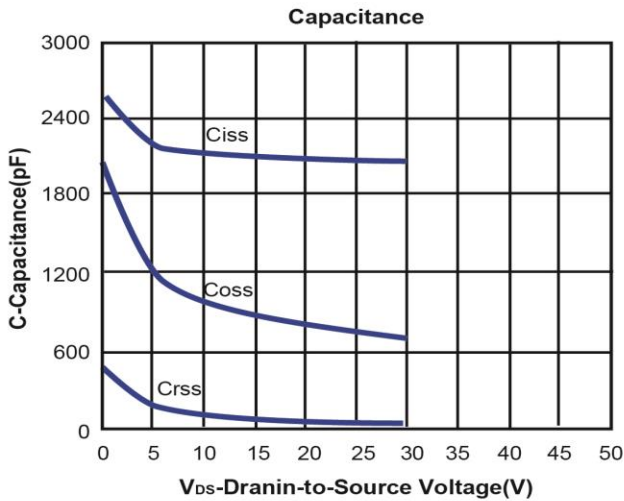
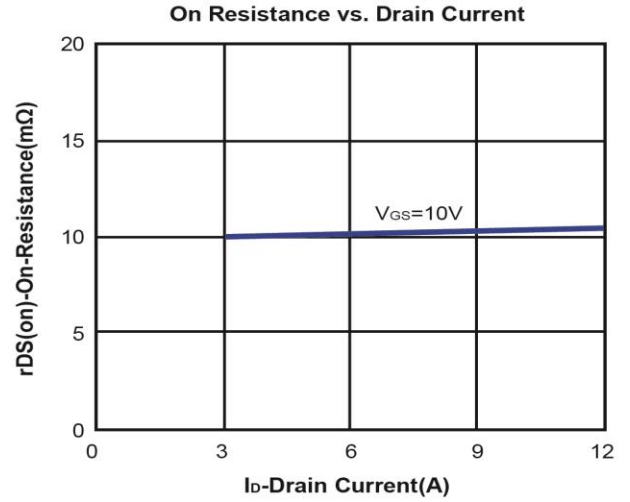
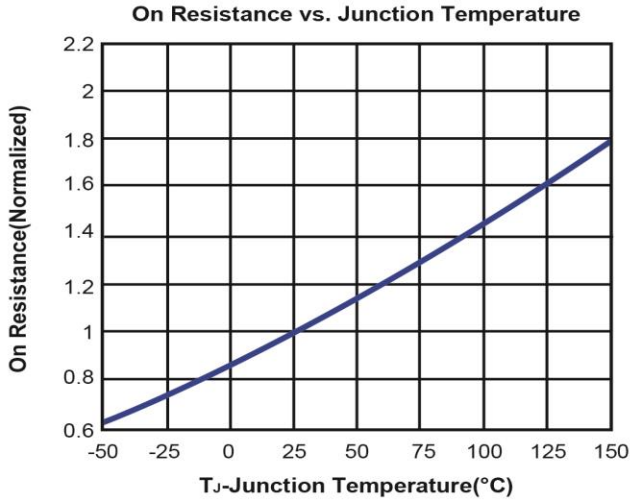
Notes: a. Based on epoxy or solder paste and bond wire Cu 1.5mil x1 (G), Al 15mil x2 (S) on each die of TO-220 package.

 b. Pulse test; pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

c. Force mos reserves the right to improve product design, functions and reliability without notice.

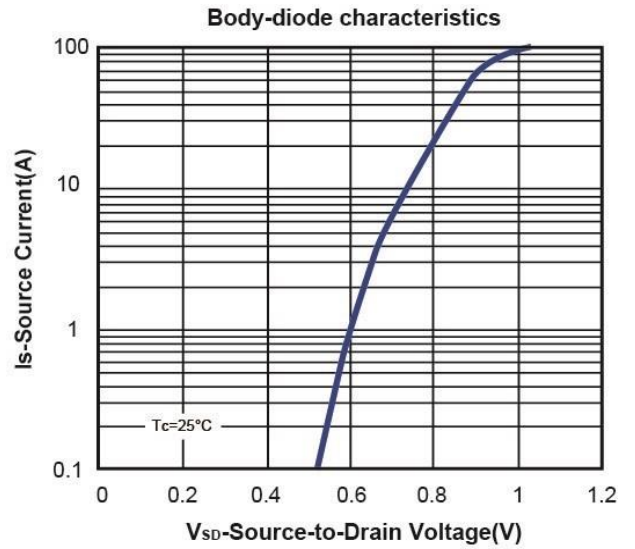
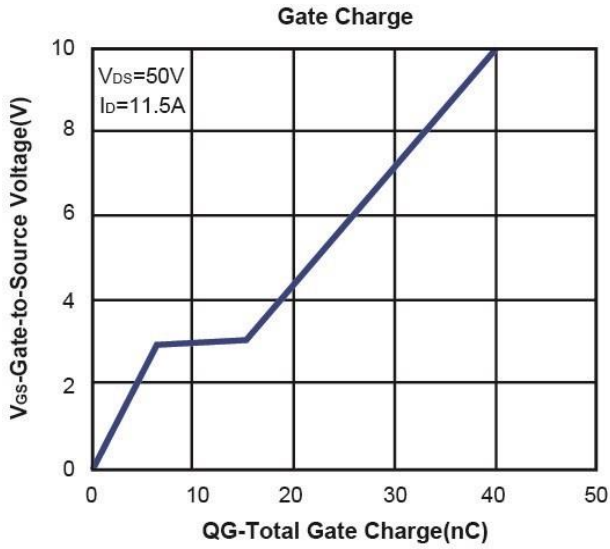
**N-Channel 100V(D-S) MOSFET**

**Typical Characteristics (T<sub>J</sub> =25°C Noted)**



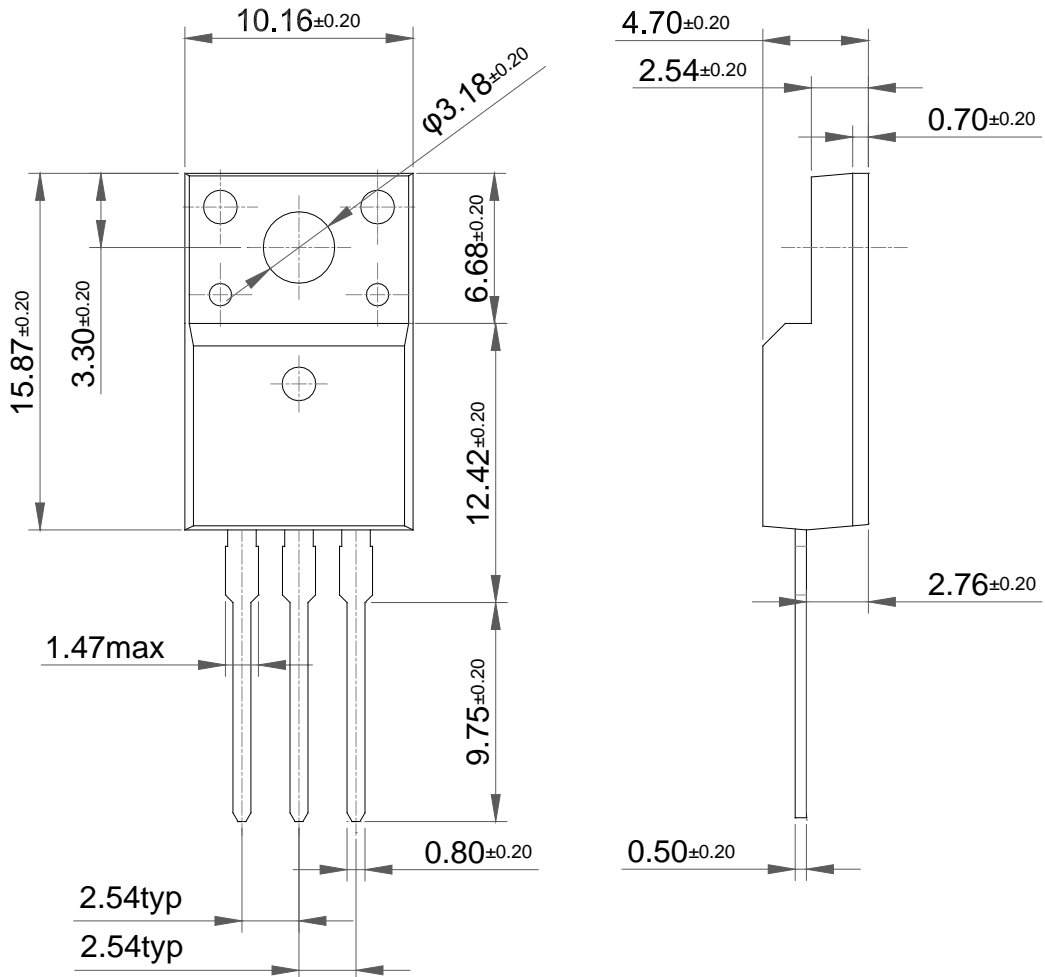
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# Package Dimension

## TO-220F



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