

N-Channel MOSFET

$V_{DSS}=650V$, $I_D=20A$, $R_{DS(ON)}=0.5\Omega(\text{max})$

Features

- $R_{DS(ON)} = 0.5\Omega$ @ $V_{GS} = 10V$
- High Switching Speed
- Avalanche Energy Specified

Applications

- Electronic Ballasts
- LED Power Supply
- High Efficiency Switch Mode Power Supplies

Mechanical Data

- Case: ITO-220AB Package
- Case Material: "Green" Molding Compound
UL Flammability Classification Rating 94V-0
- Halogen Free

Ordering Information

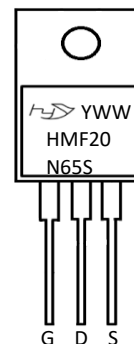
- Package : ITO-220AB
- Quantity Per Tube : 50 pcs

Package Outline

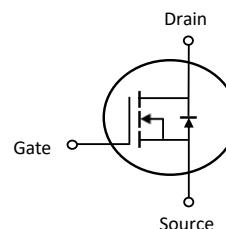


ITO-220AB Top View

Marking Information



Device Schematic



Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	650	V
Gate-Source Voltage	V_{GSS}	± 30	V
Continuous Drain Current	I_D	20	A
Pulsed Drain Current (Note 2.)	I_{DM}	40	A
Single Pulsed Avalanche Energy (Note 3.)	E_{AS}	562	mJ
Peak Diode Recovery dv/dt (Note 4.)	dv/dt	2.46	V/ns
Power Dissipation	P_D	65	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics(@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating : Pulse width limited by maximum junction temperature

3. $L = 10\text{mH}$, $I_{AS} = 10.5\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

4. $I_{SD} \leq 20\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

Electrical Characteristics(@TA = +25°C, unless otherwise specified.)

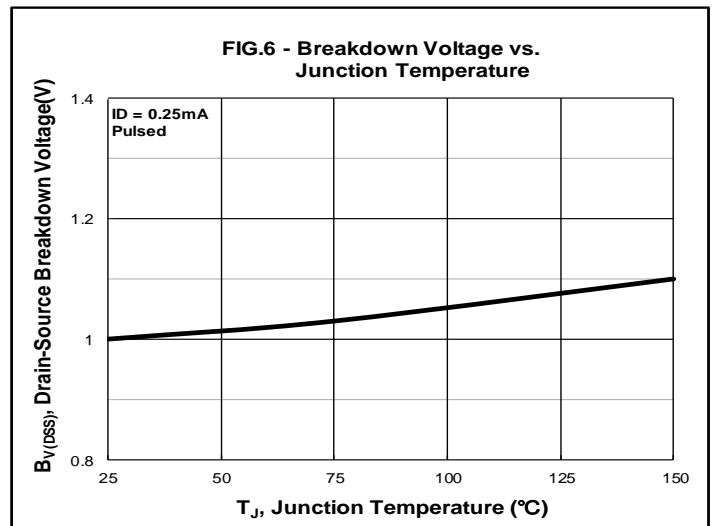
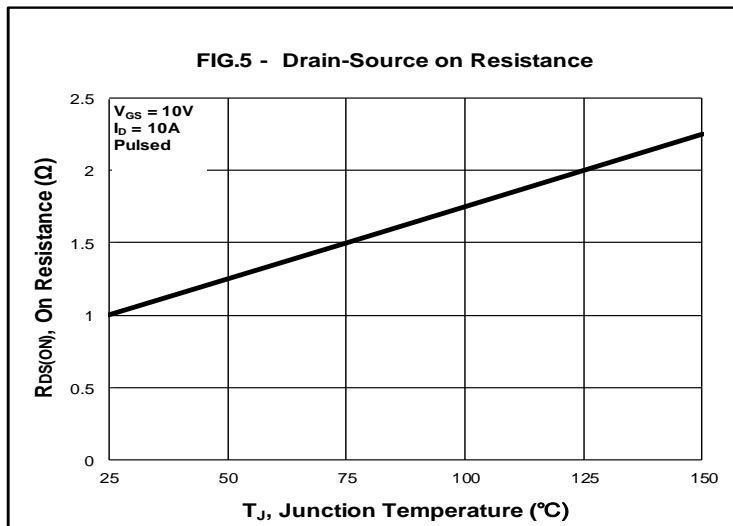
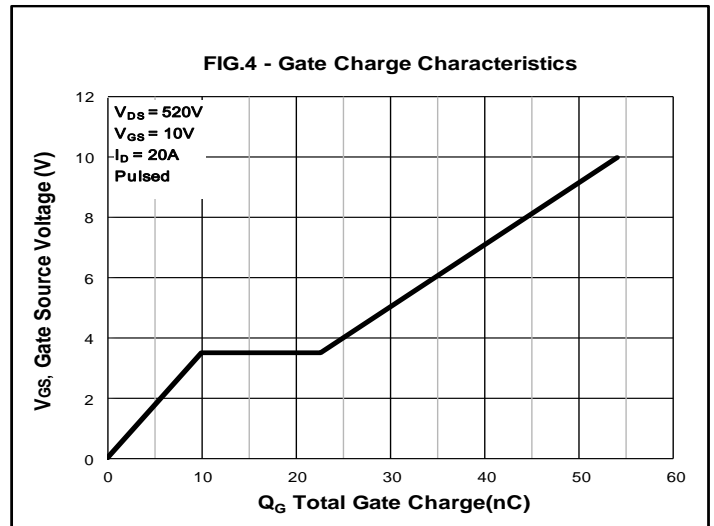
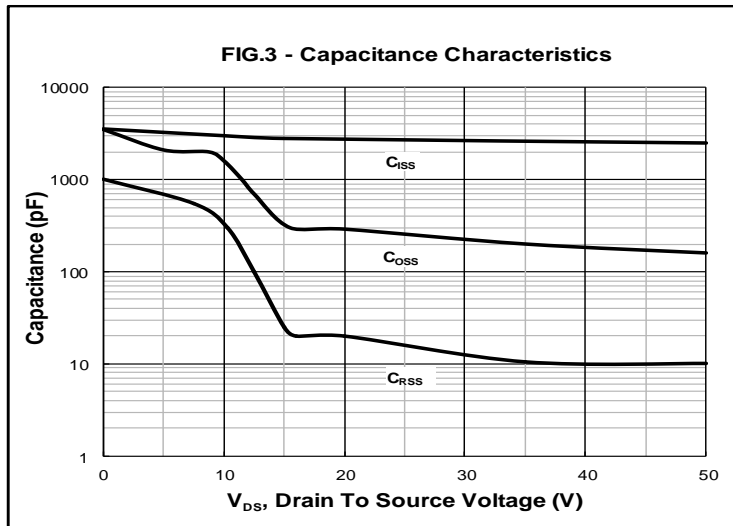
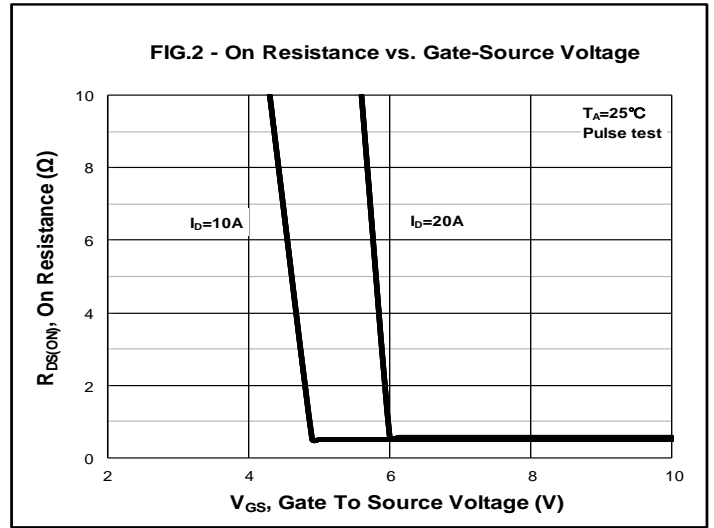
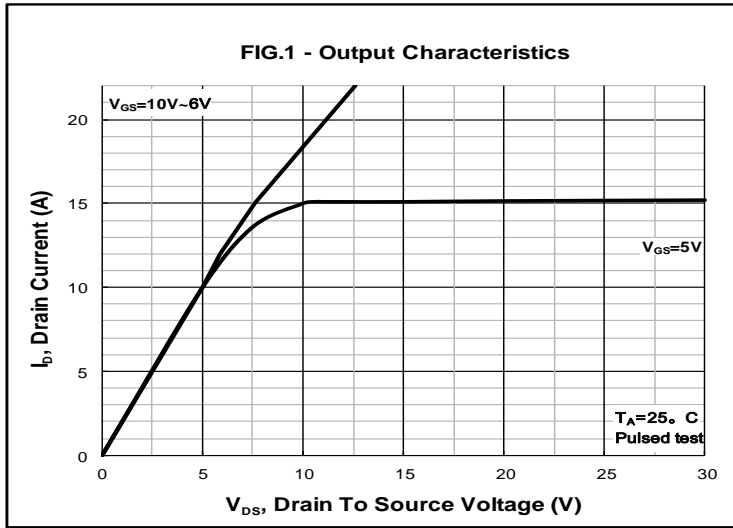
Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	650	-	-	V
Forward Gate-Source Leakage Current	$V_{DS}=0V, V_{GS}=30V$	I_{GSS}	-	-	100	nA
Reverse Gate-Source Leakage Current	$V_{DS}=0V, V_{GS}=-30V$		-	-	-100	nA
Drain-Source Leakage Current	$V_{DS}=650V, V_{GS}=0V$	I_{DSS}	-	-	10	μA
ON Characteristics						
Gate-Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{th(GS)}$	2	-	4	V
Static Drain-Source On-State Resistance	$V_{GS}=10V, I_D=10A$	$R_{DS(ON)}$	-	-	0.5	Ω
Dynamic Characteristics						
Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=1MHz$	C_{ISS}	-	2512	-	pF
Output Capacitance		C_{OSS}	-	231	-	
Reverse Transfer Capacitance		C_{RSS}	-	14	-	
Switching Characteristics						
Turn-On Delay Time (Note 1)	$V_{DS}=100V, V_{GS}=10V, I_D=20A, R_G=25\Omega(\text{Note } 1,2)$	$t_{D(ON)}$	-	28	-	ns
Turn-On Rise Time		t_R	-	35	-	
Turn-Off Delay Time		$t_{D(OFF)}$	-	140	-	
Turn-Off Fall Time		t_F	-	76	-	
Switching Characteristics						
Total Gate Charge (Note 1)	$V_{DS}=100V, V_{GS}=10V, I_D=20A, I_G=1mA(\text{Note } 1,2)$	Q_G	-	54	-	nC
Gate-Source Charge		Q_{GS}	-	10	-	
Gate-Drain Charge		Q_{GD}	-	13	-	
Drain-Source Diode Characteristics And Maximum Ratings						
Drain-Source Diode Forward Voltage(Note 1)	$I_S=20A, V_{GS}=0V$	V_{SD}	-	-	1.4	V
Maximum Body-Diode Continuous Current		I_S	-	-	20	A
Maximum Body-Diode Pulsed Current		I_{SM}	-	-	40	A
Reverse Recovery Time(Note 1)	$V_{GS}=0V, I_S=20A, di_F/dt=100A/\mu s(\text{Note } 1)$	t_{RR}	-	506	-	ns
Reverse Recovery Charge		Q_{RR}	-	9	-	μC

Notes: 1. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$

2. Essentially independent of operating temperature



Rating and Characteristic Curves





Rating and Characteristic Curves

FIG.7 - Threshold Voltage

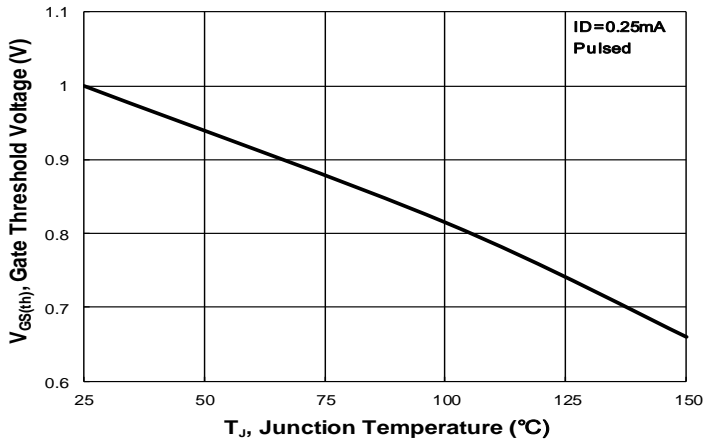


FIG.8 - Source Current vs. Source-Drain Voltage

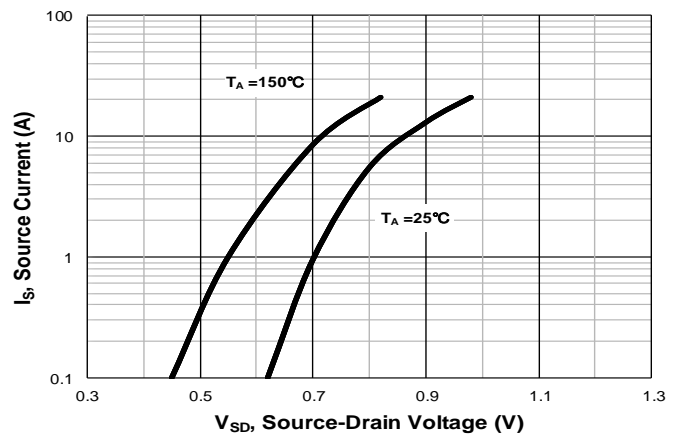


FIG.9 - Drain Current vs. Gate-Source Voltage

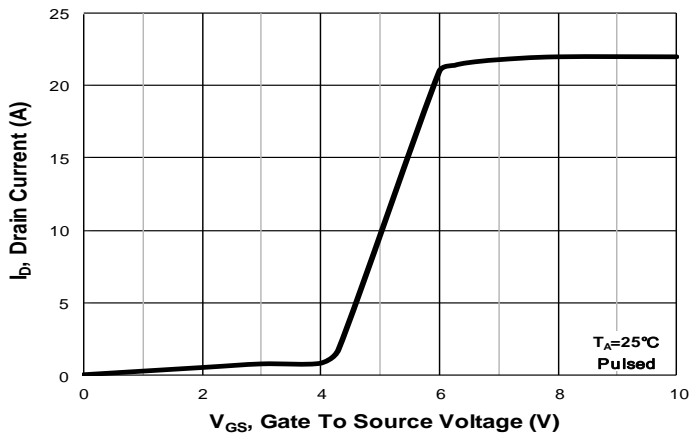


FIG.10 - Drain-Source On-Resistance vs. Drain Current

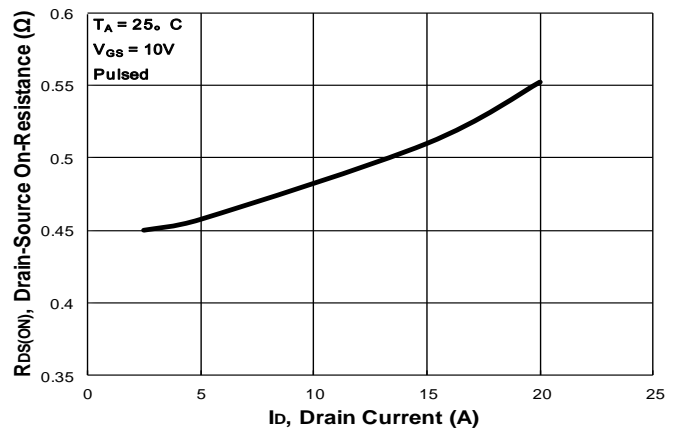


FIG.11 - Power Dissipation vs. Junction Temperature

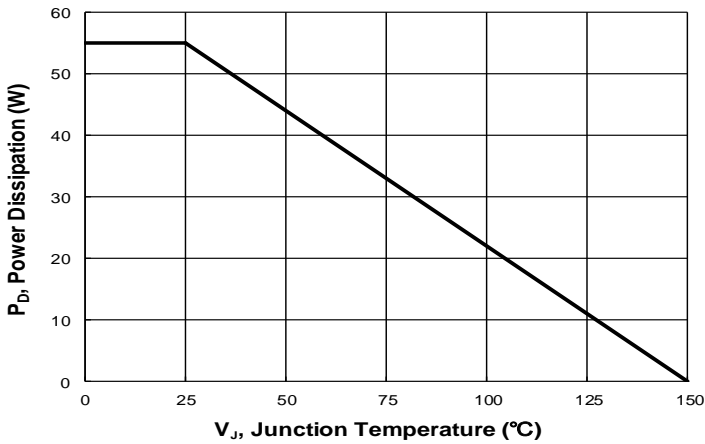
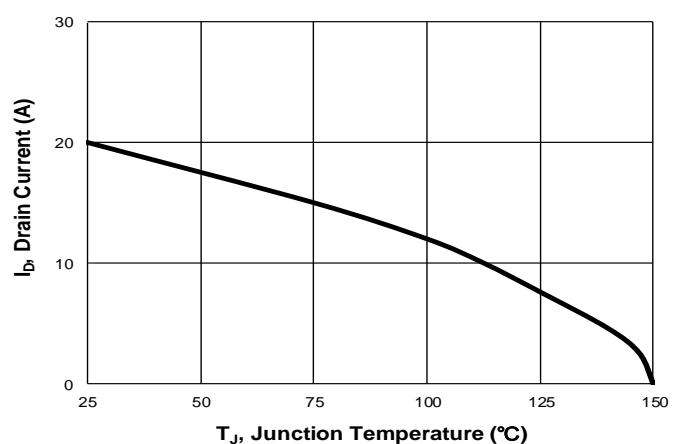


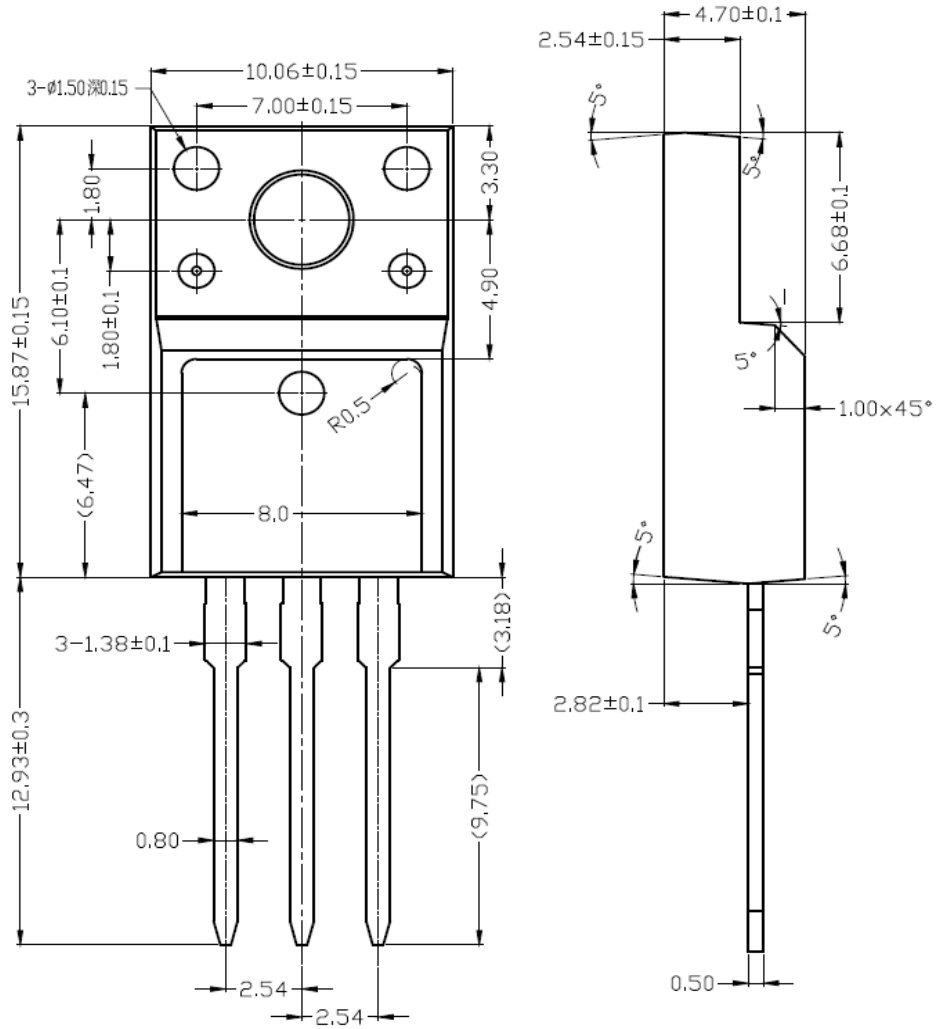
FIG.12 - Drain Current vs. Junction Temperature





Package Outline Dimensions

ITO-220AB





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