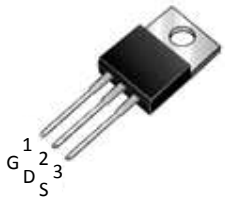
HY12N65T / HY12N65FT

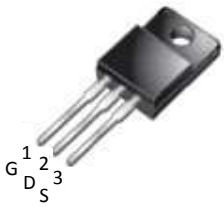
650V / 12A **N-Channel Enhancement Mode MOSFET**	650V, $R_{DS(ON)}$=0.8Ω@V_{GS}=10V, I_D=6.0A

Features

- Low ON Resistance
- Fast Switching
- Low Gate Charge & Low C_{RSS}
- Fully Characterized Avalanche Voltage and Current
- Specially Desigened for AC Adapter, Battery Charger and SMPS
- In compliance with EU RoHs 2002/95/EC Directives



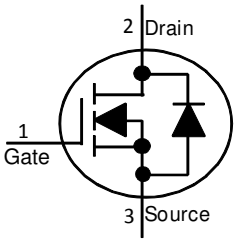
TO-220AB



ITO-220AB

Mechanical Information

- Case: TO-220AB / ITO-220AB Molded Plastic
- Terminals : Solderable per MIL-STD-750,Method 2026



Marking & Ordering Information

TYPE	MARKING	PACKAGE	PACKING
HY12N65T	12N65T	TO-220AB	50PCS/TUBE
HY12N65FT	12N65FT	ITO-220AB	50PCS/TUBE

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

Parameter		Symbol	HY12N65T	HY12N65FT	Units
Drain-Source Voltage		V_{DS}	650		V
Gate-Source Voltage		V_{GS}	±30		V
Continuous Drain Current	T_C=25°C	I_D	12	12	A
Pulsed Drain Current [1]		I_{DM}	48	48	A
Maximum Power Dissipation Derating Factor	T_C=25°C	P_D	175 1.4	52 0.42	W
Avalanche Energy with Single Pulse I_{AS}=12A, VDD=90V, L=10.5mH		E_{AS}	760		mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 to +150		°C

Note : 1. Maximum DC current limited by the package

Thermal Characteristics

PARAMETER	Symbol	HY12N65T	HY12N65FT	Units
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	0.7	2.4	°C/W
Junction-to Ambient Thermal Resistance	$R_{\theta JA}$	62.5	100	°C/W

Electrical Characteristics (T_C=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	650	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	2.0	-	4.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}= 10V, I_D= 6.0A	-	0.69	0.8	Ω
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V	-	-	10	uA
Gate Body Leakage	I_{GSS}	V_{GS}=±30V, V_{DS}=0V	-	-	±100	nA
Dynamic						
Total Gate Charge	Q_g	V_{DS}=520V, I_D=12A, V_{GS}=10V	-	42.6	52	nC
Gate-Source Charge	Q_{gs}		-	8.2	-	
Gate-Drain Charge	Q_{gd}		-	12.8	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=325V, I_D=12A V_{GS}=10V, R_G=25Ω	-	14.6	20	ns
Turn-On Rise Time	t_r		-	22.6	32	
Turn-Off Delay Time	$t_{d(off)}$		-	65.2	85	
Turn-Off Fall Time	t_f		-	22.8	36	
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V f=1.0MH_Z	-	1400	2050	pF
Output Capacitance	C_{oss}		-	175	210	
Reverse Transfer Capacitance	C_{rss}		-	5.5	12	
Source-Drain Diode						
Max. Diode Forward Current	I_S	-	-	-	12	A
Max.Pulsed Source Current	I_{SM}	-	-	-	48	A
Diode Forward Voltage	V_{SD}	I_S=12A , V_{GS}=0V	-	-	1.4	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V, I_F=12A di/dt=100A/us	-	460	-	ns
Reverse Recovery Charge	Q_{rr}		-	4.6	-	uC

NOTE : Plus Test : Pluse Width ≤ 300us, Duty Cycle ≤ 2%.

Typical Characteristics Curves (T_C=25℃, unless otherwise noted)

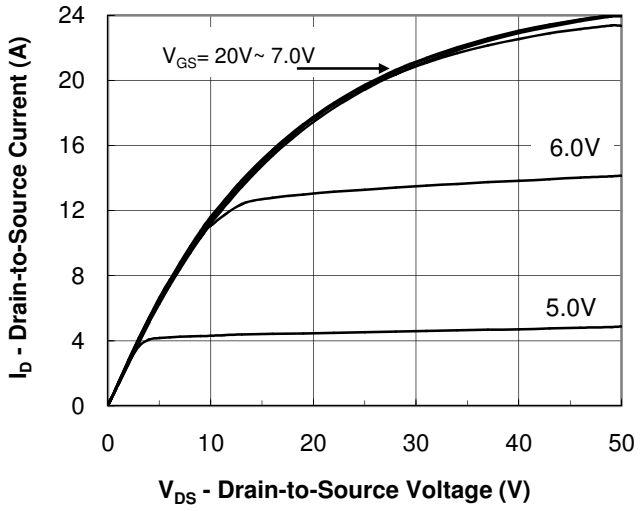


Fig.1 Output Characteristic

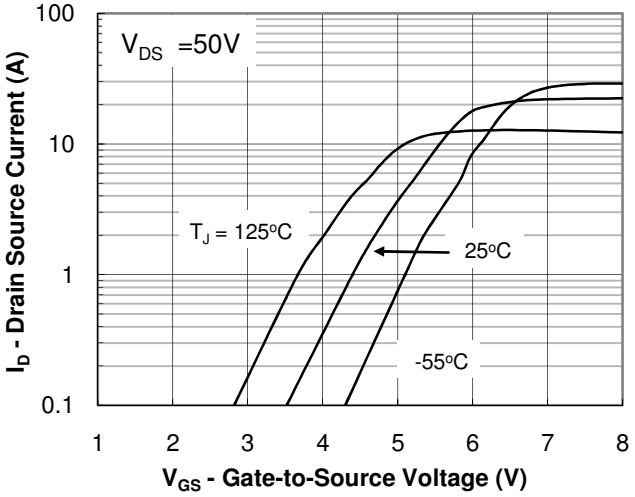


Fig.2 Transfer Characteristic

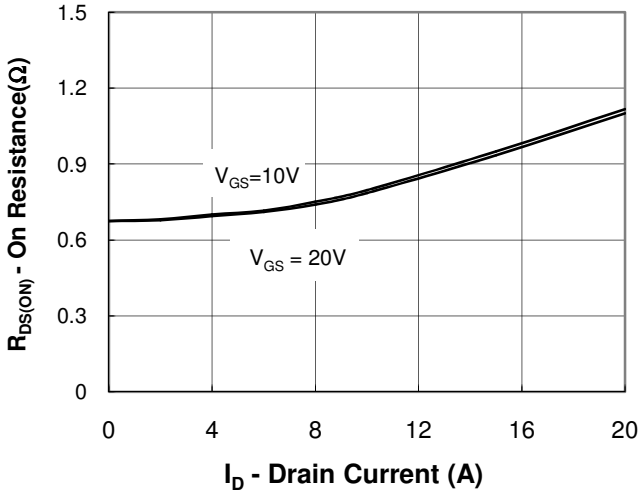


Fig.3 On-Resistance vs Drain Current

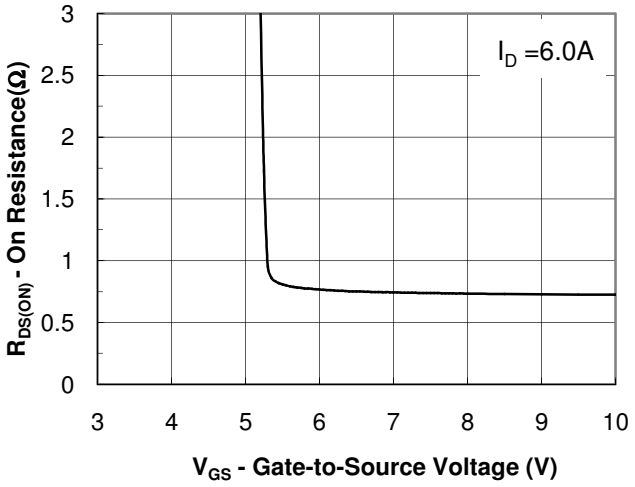


Fig.4 On-Resistance vs Gate to Source Voltage

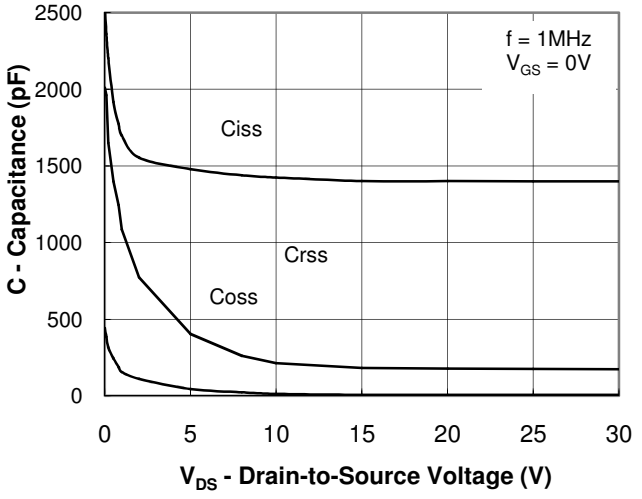


Fig.5 Capacitance Characteristic

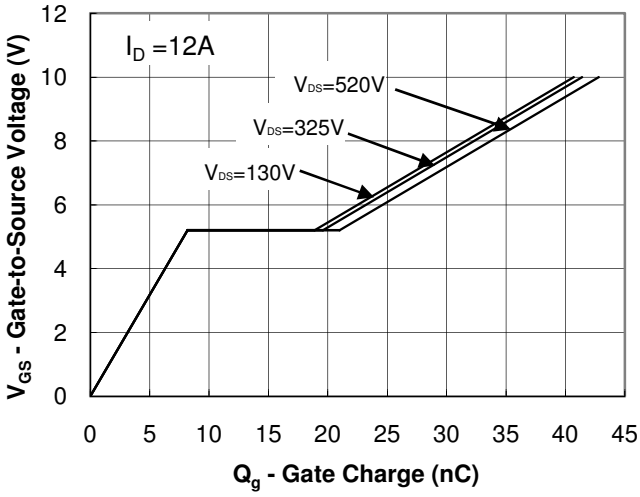


Fig.6 Gate Charge Characteristic

Typical Characteristics Curves (T_C=25℃, unless otherwise noted)

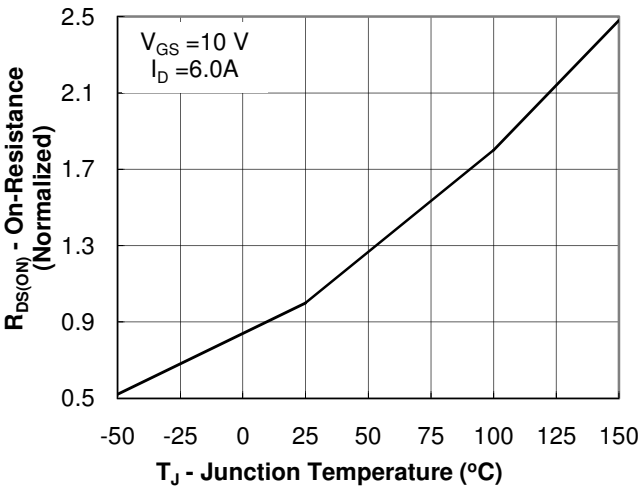


Fig.7 On-Resistance vs Junction Temperature

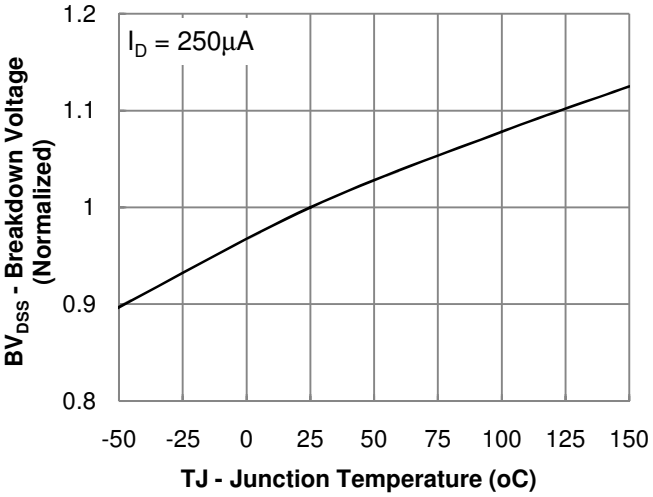


Fig.8 Breakdown Voltage vs Junction Temperature

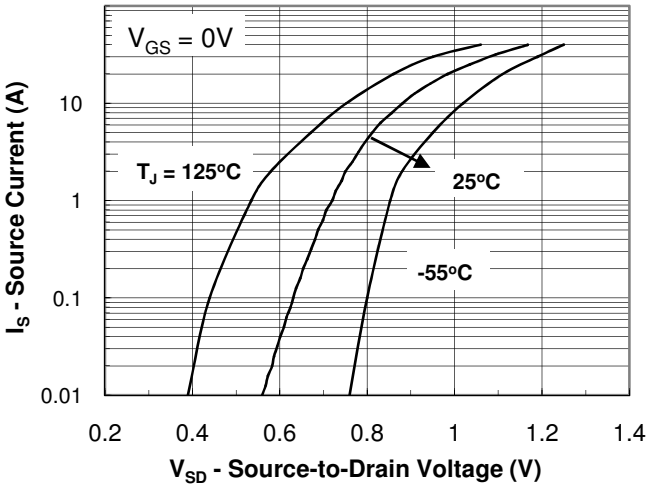


Fig.9 Body Diode Forward Voltage Characteristic