

600V / 4.0A
N-Channel Enhancement Mode MOSFET

600V, $R_{DS(ON)}=2.4\Omega@V_{GS}=10V, I_D=2.0A$

Features

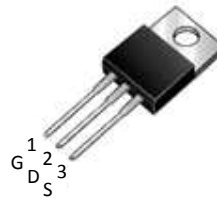
- Low ON Resistance
- Fast Switching
- Low Gate Charge & Low C_{RSS}
- Fully Characterized Avalanche Voltage and Current
- Specially Designed for AC Adapter, Battery Charger and SMPS
- In compliance with EU RoHs 2002/95/EC Directives

Mechanical Information

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

Marking & Ordering Information

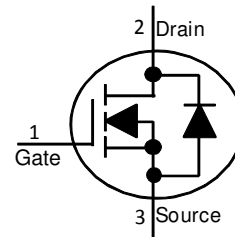
TYPE	MARKING	PACKAGE	PACKING
HY4N60T	4N60T	TO-220AB	50PCS/TUBE
HY4N60FT	4N60FT	ITO-220AB	50PCS/TUBE



TO-220AB



ITO-220AB



Absolute Maximum Ratings ($T_c=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	HY4N60T	HY4N60FT	Units
Drain-Source Voltage		V_{DS}	600		V
Gate-Source Voltage		V_{GS}	± 30		V
Continuous Drain Current	$T_c=25^\circ\text{C}$	I_D	4	4	A
Pulsed Drain Current ¹⁾		I_{DM}	16	16	A
Maximum Power Dissipation Derating Factor	$T_c=25^\circ\text{C}$	P_D	71 0.57	26 0.21	W
Avalanche Energy with Single Pulse $I_{AS}=4A, V_{DD}=90V, L=27.5mH$		E_{AS}	220		mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150		$^\circ\text{C}$

Note : 1. Maximum DC current limited by the package

Thermal Characteristics

PARAMETER	Symbol	HY4N60T	HY4N60FT	Units
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	1.76	4.8	$^\circ\text{C/W}$
Junction-to Ambient Thermal Resistance	$R_{\theta JA}$	62.5	100	$^\circ\text{C/W}$

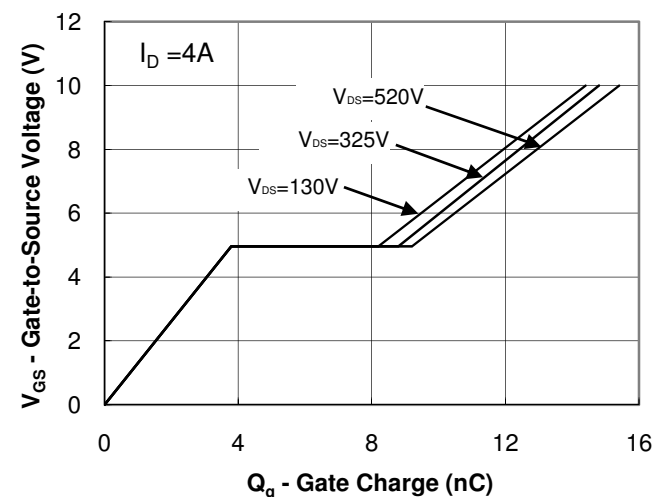
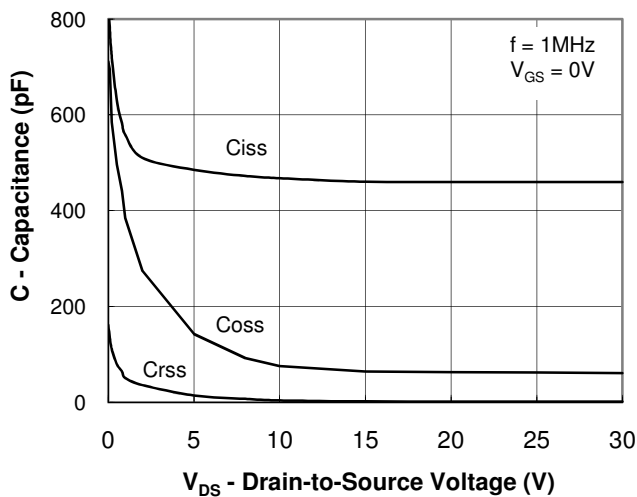
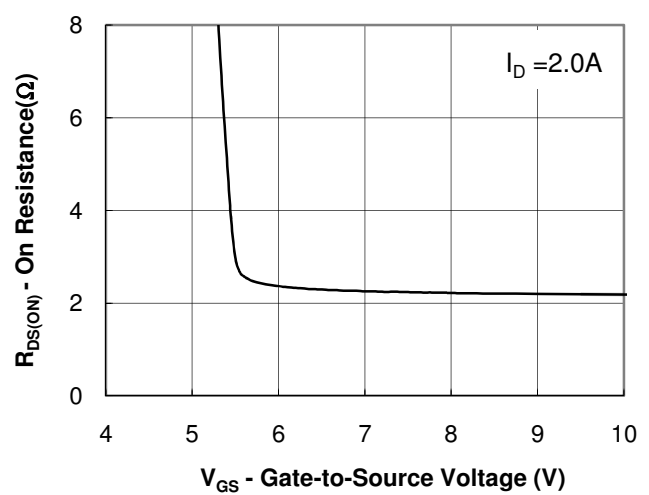
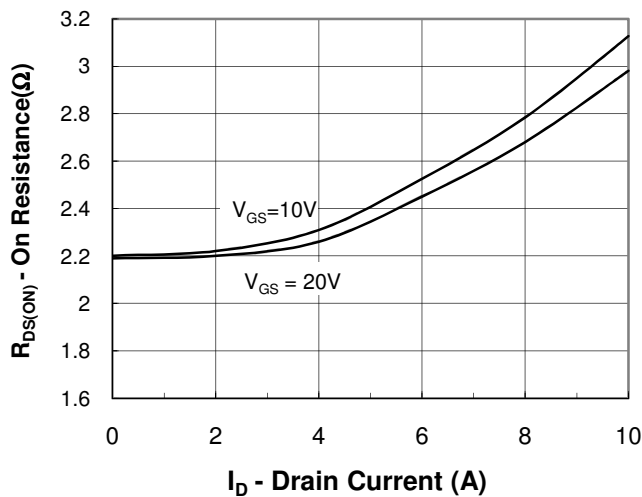
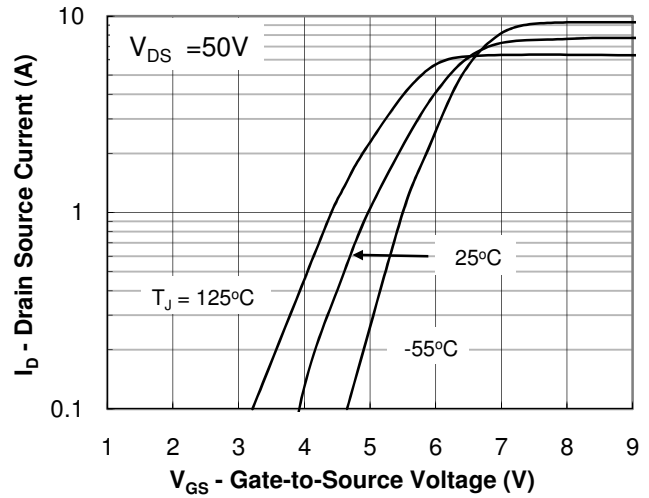
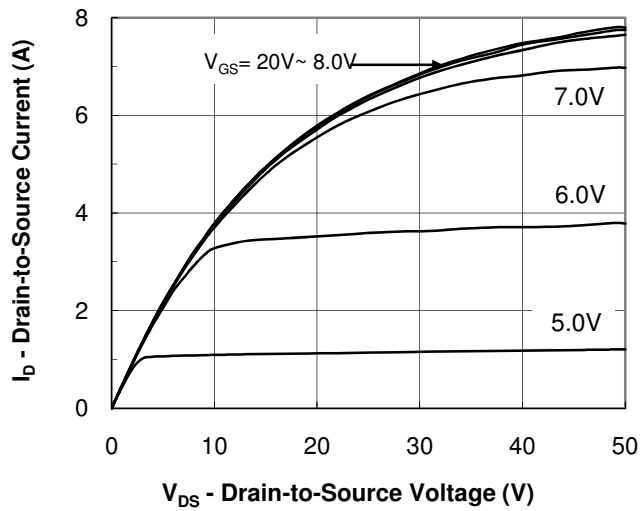
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Electrical Characteristics ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

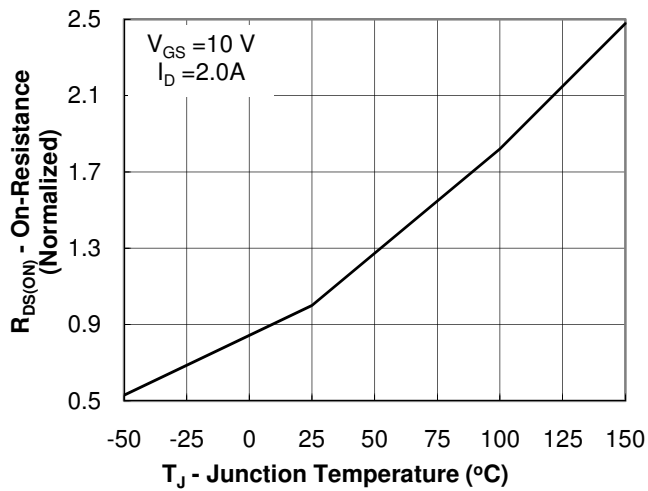
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	600	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.0	-	4.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 2.0A	-	2.0	2.4	Ω
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =600V, 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} =480V, I _D =4.0A V _{GS} =10V	-	15.4	22	nC
Gate-Source Charge	Q _{gs}		-	3.8	-	
Gate-Drain Charge	Q _{gd}		-	5.4	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =300V , I _D =4.0A V _{GS} =10V ,R _G =25Ω	-	12.4	16	ns
Turn-On Rise Time	t _r		-	13.2	18	
Turn-Off Delay Time	t _{d(off)}		-	22.8	32	
Turn-Off Fall Time	t _f		-	9.6	14	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V f=1.0MH _z	-	460	620	pF
Output Capacitance	C _{oss}		-	63	72	
Reverse Transfer Capacitance	C _{rss}		-	1.8	5.6	
Source-Drain Diode						
Max. Diode Forward Current	I _S	-	-	-	4.0	A
Max.Pulsed Source Current	I _{SM}	-	-	-	16	A
Diode Forward Voltage	V _{SD}	I _S =4.0A , V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _F =4.0A di/dt=100A/us	-	290	-	ns
Reverse Recovery Charge	Q _{rr}		-	2.8	-	uC

NOTE : Plus Test : Pluse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

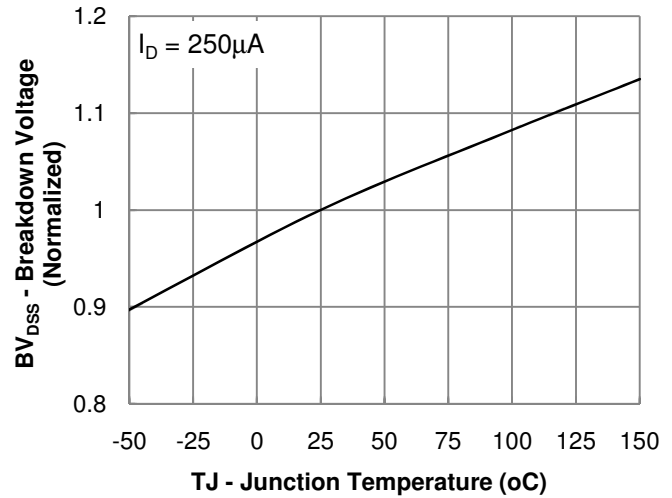
Typical Characteristics Curves ($T_C=25^\circ\text{C}$, unless otherwise noted)



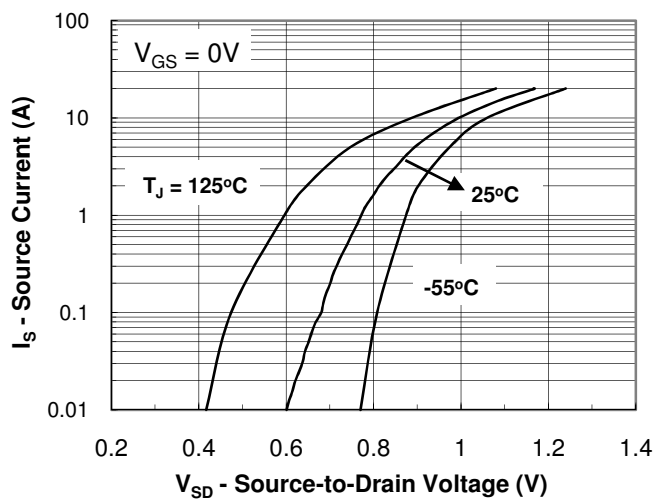
Typical Characteristics Curves ($T_C=25^{\circ}\text{C}$, unless otherwise noted)



**Fig.7 On-Resistance
vs Junction Temperature**



**Fig.8 Breakdown Voltage
vs Junction Temperature**



**Fig.9 Body Diode
Forward Voltage Characteristic**