

200V / 18A
N-Channel Enhancement Mode MOSFET

200V, $R_{DS(ON)}=92m\Omega@V_{GS}=10V, I_D=10A$

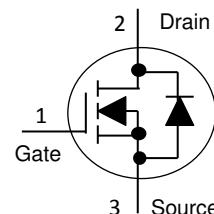
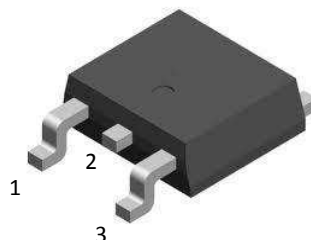
Features

- Low On-State Resistance
- Excellent Gate Charge x $R_{DS(ON)}$ Product (FOM)
- Fully Characterized Avalanche Voltage and Current
- Specially Designed for DC-DC Converter, Off-line UPS, Automotive System, Solenoid and Motor Control
- In compliance with EU RoHs 2002/95/EC Directives

TO-252

Mechanical Information

- Case: TO-252 Molded Plastic
- Terminals : Solderable per MIL-STD-750,Method 2026



Marking & Ordering Information

TYPE	MARKING	PACKAGE	PACKING
HY18N20D	18N20D	TO-252	2.5K/REEL

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

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 30	V
Continuous Drain Current	$T_C=25^{\circ}C$	I_D	18	A
Pulsed Drain Current ¹⁾		I_{DM}	72	A
Maximum Power Dissipation	$T_C=25^{\circ}C$	P_D	48	W
Derating Factor			0.38	
Avalanche Energy with Single Pulse, $L=3mH$		E_{AS}	125	mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^{\circ}C$

Note : 1. Maximum DC current limited by the package

Thermal Characteristics

Parameter	Symbol	Value	Units
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	2.6	$^{\circ}C/W$
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	50	$^{\circ}C/W$

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Electrical Characteristics ($T_C=25$, Unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ 、 $I_D=250\mu A$	200	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ 、 $I_D=250\mu A$	1	-	3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V$ 、 $I_D=10A$	-	80	92	$m\Omega$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=160V$ 、 $V_{GS}=0V$	-	-	1	μA
Gate Body Leakage Current	I_{GSS}	$V_{GS}=\pm 24V$ 、 $V_{DS}=0V$	-	-	100	nA
Dynamic						
Total Gate Charge	Qg	$V_{DS}=100V$ 、 $I_D=10A$ $V_{GS}=10V$	-	26.2	-	nC
Gate-Source Charge	Qgs		-	5.8	-	
Gate-Drain Charge	Qgd		-	11.2	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=100V$ 、 $I_D=10A$ $V_{GS}=10V$ 、 $R_G=3.6\Omega$	-	12.2	-	ns
Turn-On Rise Time	t_r		-	8.6	-	
Turn-Off Delay Time	$t_{d(off)}$		-	26	-	
Turn-Off Fall Time	t_f		-	9.2	-	
Input Capacitance	C_{iss}	$V_{DS}=30V$ 、 $V_{GS}=0V$ $f=1.0MHz$	-	840	-	pF
Output Capacitance	C_{oss}		-	55	-	
Reverse Transfer Capacitance	C_{rss}		-	32	-	
Gate Resistance	Rg		-	1.5	-	Ω
Source-Drain Diode						
Max. Diode Forward Voltage	I_S	-	-	-	18	A
Diode Forward Voltage	V_{SD}	$I_S=18A$ 、 $V_{GS}=0V$	-	0.85	1.4	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V$ 、 $I_S=18A$ $di/dt=100A/\mu s$	-	76	-	ns
Reverse Recovery Charge	Q_{rr}		-	265	-	μC

NOTE : Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$

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

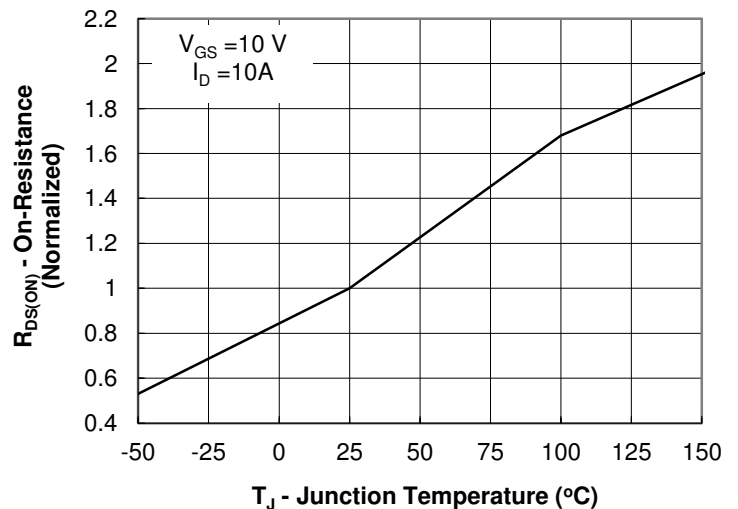
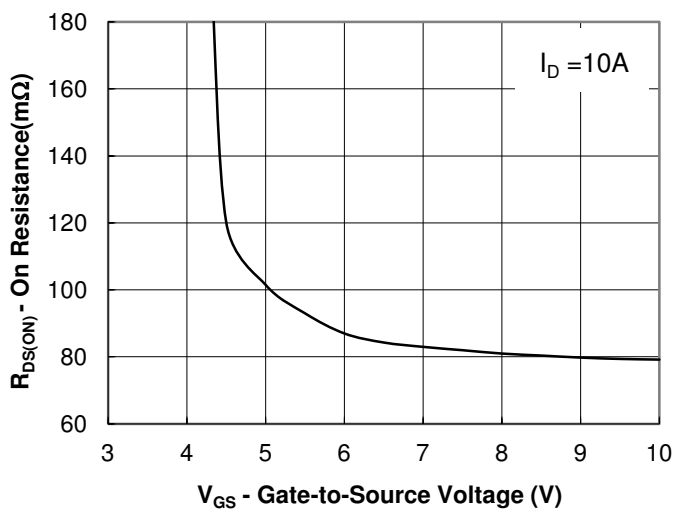
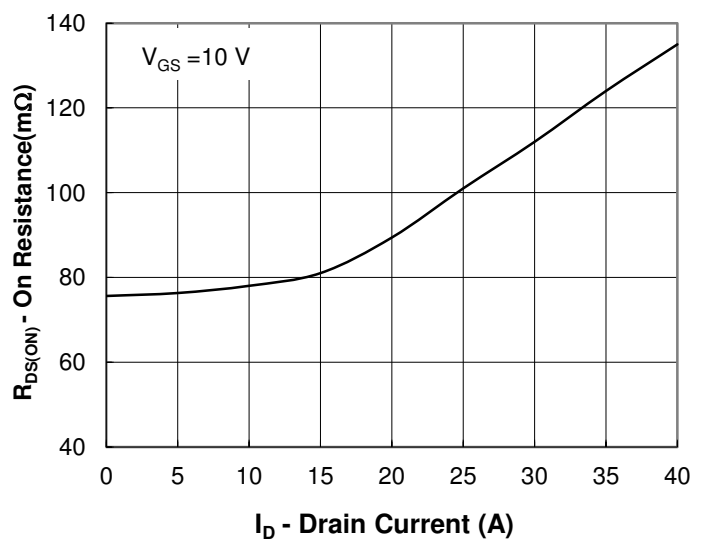
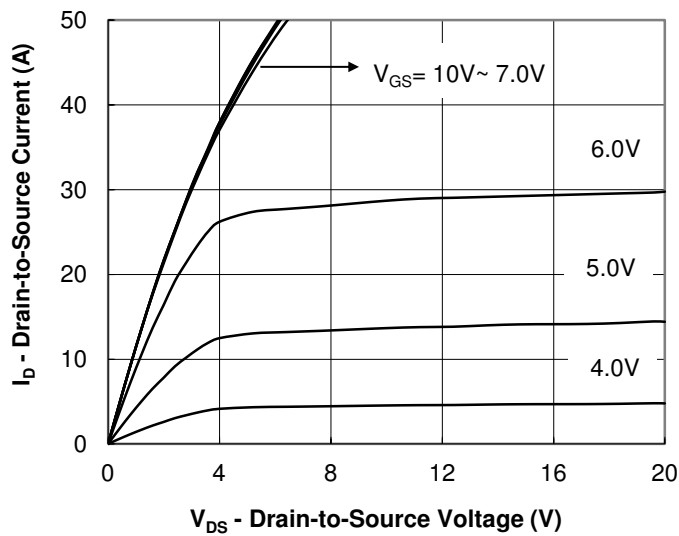


Fig.3 On-Resistance vs Gate to Source Voltage

Fig.4 On-Resistance vs Junction Temperature

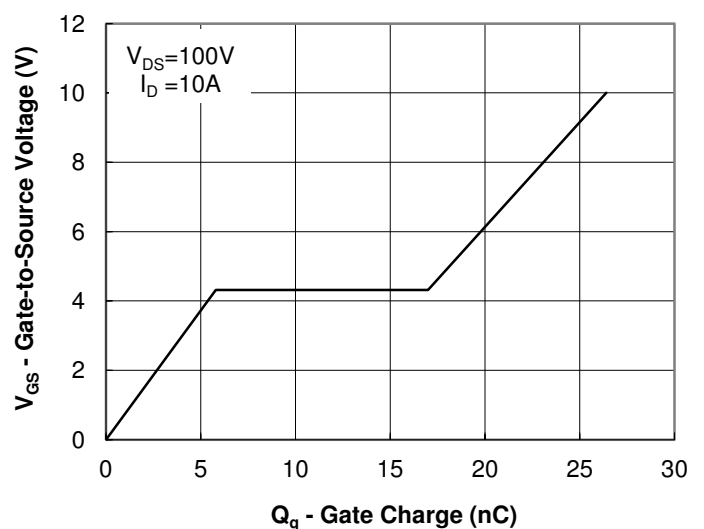
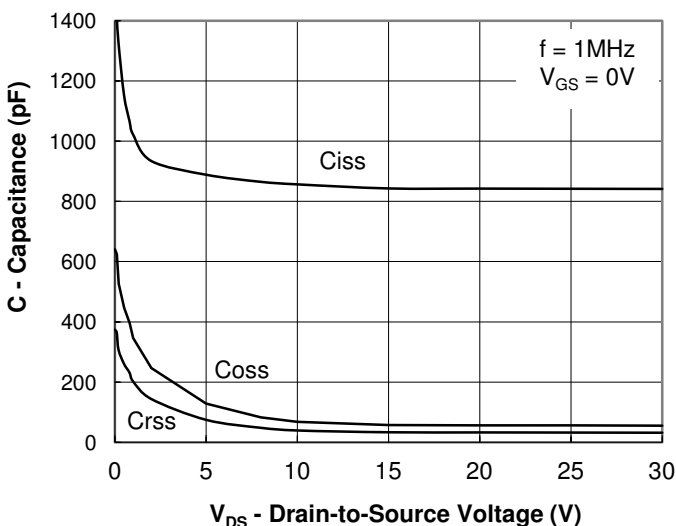


Fig.5 Capacitance Characteristic

Fig.6 Gate Charge Characteristic

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

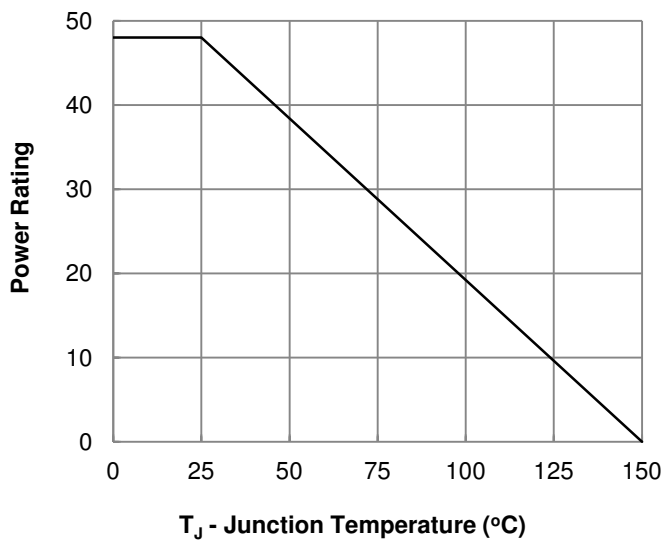


Fig.7 Power Derating Curve

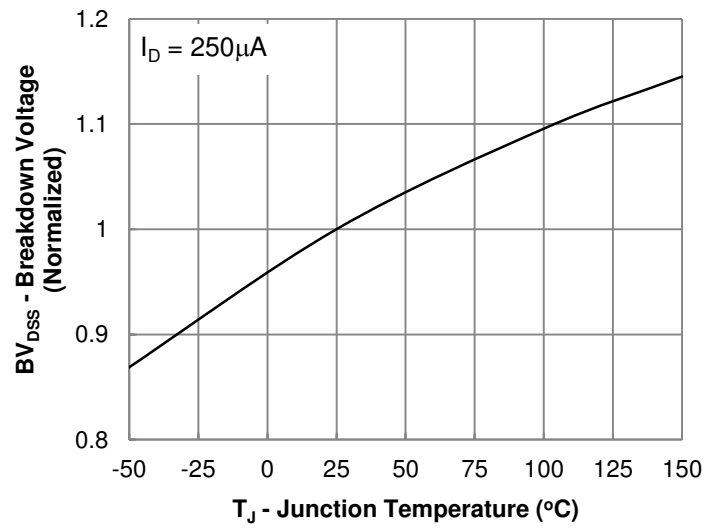


Fig.8 Breakdown Voltage vs Junction Temperature

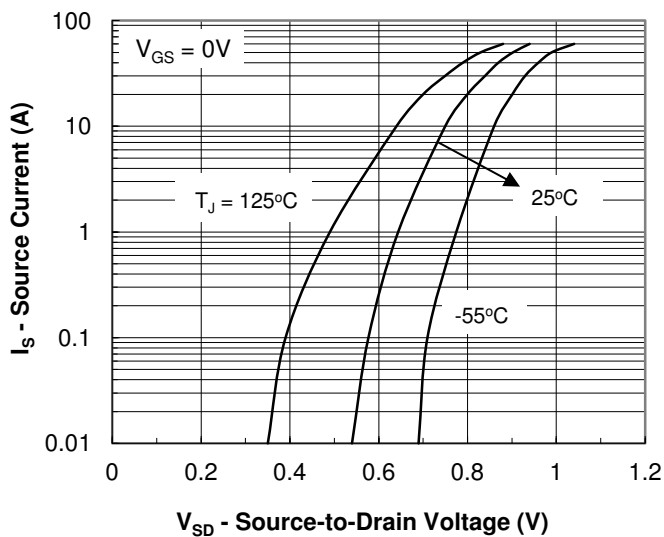


Fig.9 Body Diode Forward Voltage Characteristic