Features

- 100% EAS Guaranteed
- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

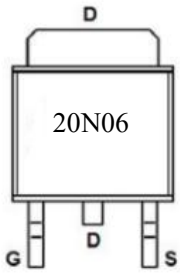
Bvdss	Rdson	ID
60V	25mΩ	20A

RoHS

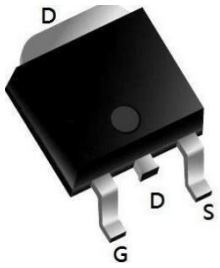
Application

- PWM applications
- Load Switch
- Power management

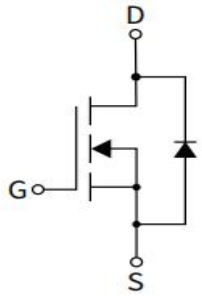
Package



Marking and pin assignment



TO-252 top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
20N06	20N06	TO-252	2500

Absolute Maximum Ratings (T_C=25℃unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25℃	I_D	20	A
	T_C = 100℃		10	A
Pulsed Drain Current[1]		I_{DM}	80	A
Single Pulsed Avalanche Energy[2]		EAS	39	mJ
Power Dissipation	T_C = 25℃	P_D	41.7	W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 ~ 175	℃

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance,Junction to Ambient	$R_{\theta JA}$	--	℃/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL20N06	TO-252	1	2	3	Tape Reel

Electrical Characteristics (T_J=25℃,unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D = 250μA	60	-	-	V
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V,T_J=25℃	-	-	1	μA
		V_{DS}=60V, V_{GS}=0V,T_J=100℃	-	-	100	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1.2	1.7	2.5	V
Drain-Source On-Resistance[4]	$R_{DS(on)}$	V_{GS}=10V, I_D=10A	-	25	32	mΩ
		V_{GS}=4.5V, I_D=5A	-	31.5	40	
Forward Trans conductance[4]	gfs	V_{DS}=5V,I_D=10A	-	15.5	-	S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz	-	1355	-	pF
Output Capacitance	C_{oss}		-	60	-	
Reverse Transfer Capacitance	C_{rss}		-	49	-	
Gate Resistance	R_g	f=1MHz	-	1.2	-	Ω
Total Gate Charge	Q_g	V_{GS}=10V, V_{DD}=30V, I_D=10A	-	22	-	nC
Gate-Source Charge	Q_{gs}		-	4.2	-	
Gate-Drain Charge	Q_{gd}		-	6.9	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=30V, R_G= 3Ω,I_D=10A	-	6.4	-	ns
Rise Time	t_r		-	15.3	-	
Turn-Off Delay Time	$t_{d(off)}$		-	25	-	
Fall Time	t_f		-	7.6	-	
Body Diode Reverse Recovery Time	t_{rr}	I_F=10A,dI/dt=100A/μs	-	26	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	45	-	nC
Diode Forward Voltage[4]	V_{SD}	V_{GS}=0V,I_S=10A	-	-	1.2	V
Continuous Source Current@T_C=25℃	I_S	-	-	-	20	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C
2. The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=14A
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

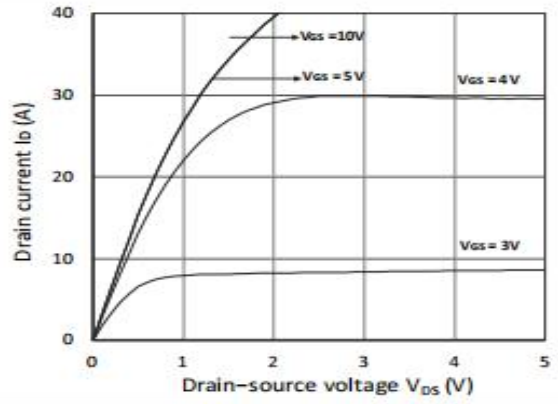


Figure 1. Output Characteristics

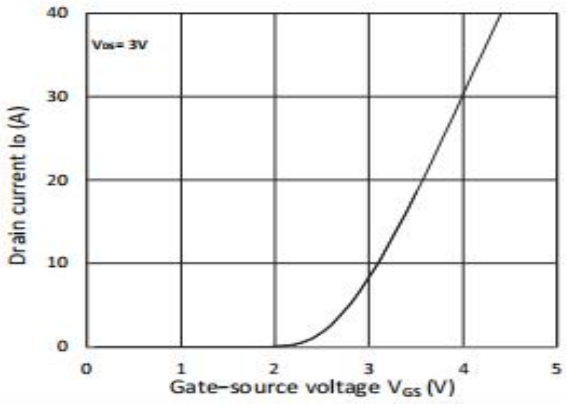


Figure 2. Transfer Characteristics

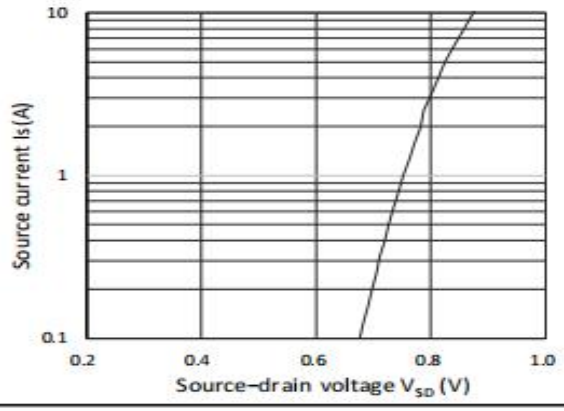


Figure 3. Forward Characteristics of Reverse

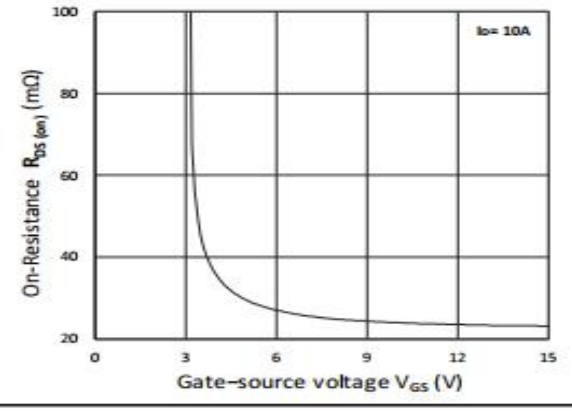


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

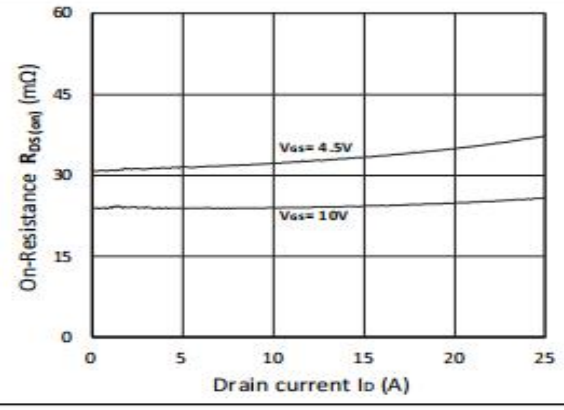


Figure 5. $R_{DS(ON)}$ vs. I_D

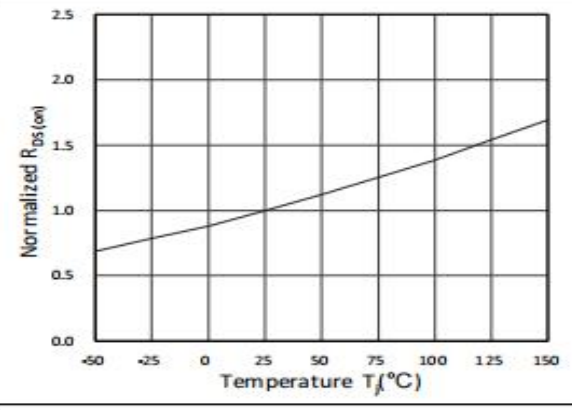


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

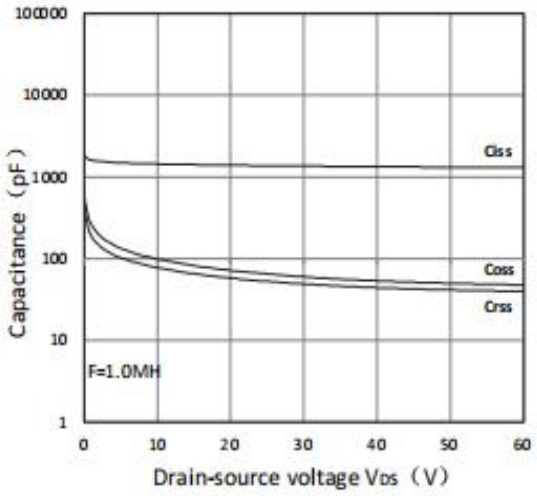


Figure 7. Capacitance Characteristics

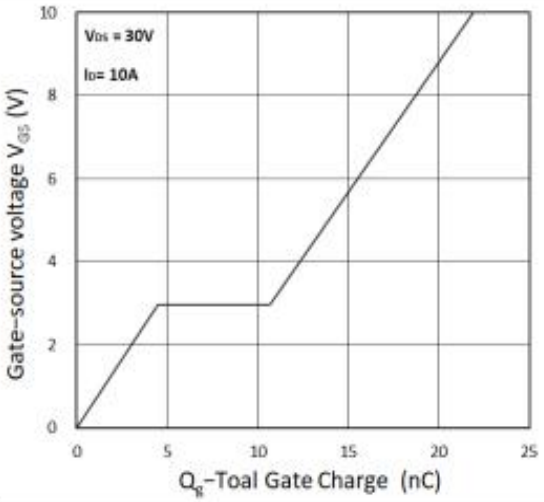


Figure 8. Gate Charge Characteristics

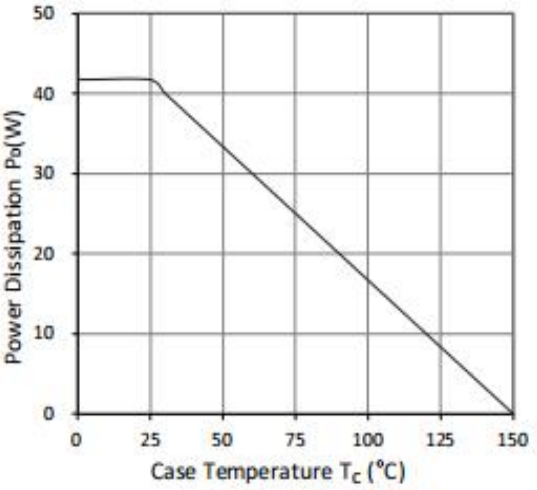


Figure 9. Power Dissipation

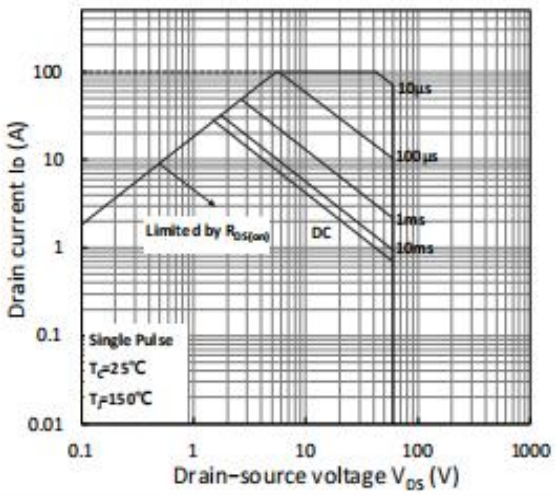


Figure10. Safe Operating Area

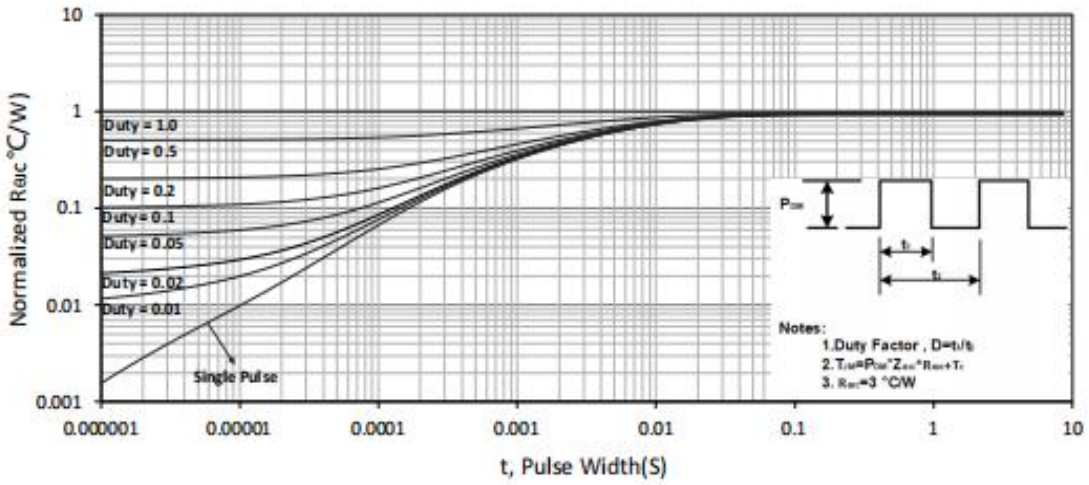
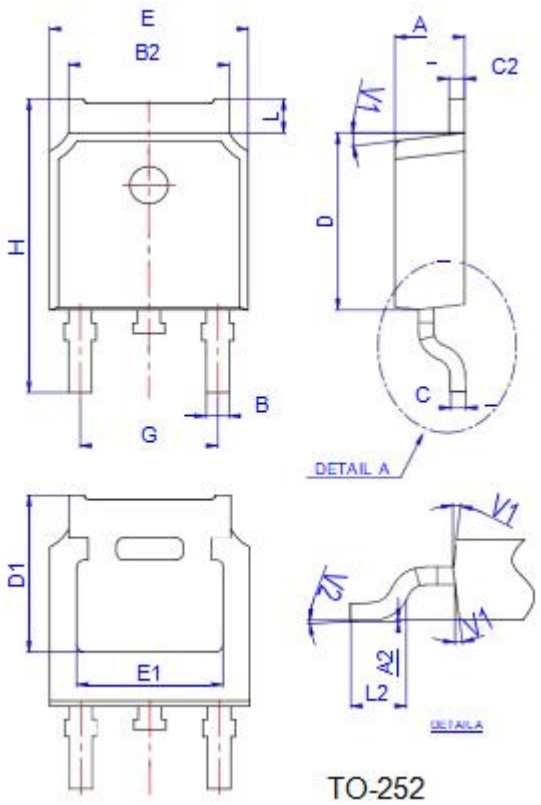


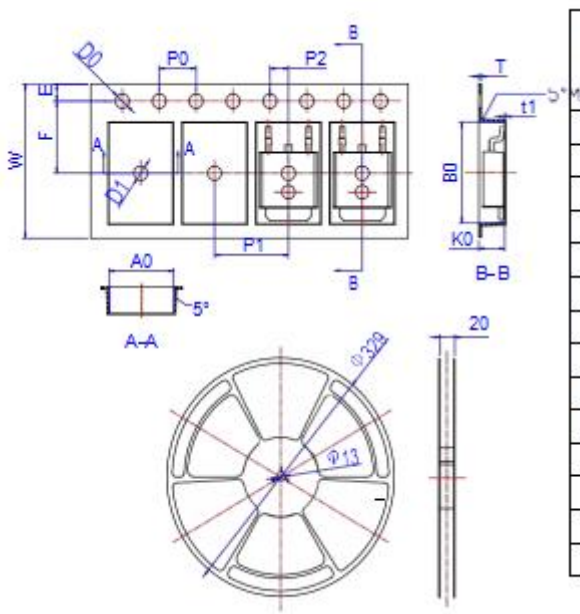
Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data TO-252



TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

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