General Description

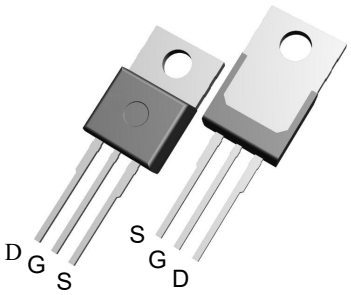
The MY100N10P is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications. The MY100N10P meet the RoHS and Green Product requi「ement, 100% EAS guaranteed with full function reliability approved.

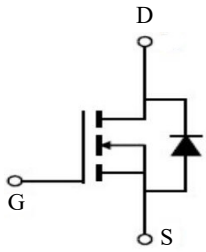
Features

V_{DSS}	100	V
I_D	120	A
$R_{DS(ON)}$(atV_{GS}=10V)	4.6	mΩ
$R_{DS(ON)}$(atV_{GS}=8V)	4.9	mΩ

Application

- Battery protection
- Load switch
- Uninterruptible power supply





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY100N10P	TO-220	100N10P	1000

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C=25°C	I_D	120	A
	T_C=100°C		73.4	
Pulsed Drain Current[2]		I_{DM}	464	A
Single Pulse Avalanche Energy[3]		EAS	205	mJ
Total Power Dissipation[4]	T_C=25°C	P_D	162	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient[1]	$R_{\theta JA}$	58	°C/W
Thermal Resistance from Junction-to-Case[1]	$R_{\theta JC}$	0.77	°C/W

Electrical Characteristics at T_j=25 ℃ unless otherwise specified

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100	-	-	V
Gate-body Leakage current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J=25°C	I_{DSS}	V_{DS} =100V, V_{GS} = 0V	-	-	1	μA
	T_J=100°C			-	-	100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.2	2.9	3.6	V
Drain-Source on-Resistance[2]		$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	-	4.6	6	mΩ
			V_{GS} = 8.0V, I_D = 15A	-	4.9	6.5	
Dynamic Characteristics							
Input Capacitance		C_{iss}	V_{DS} = 50V, V_{GS} =0V, f =1MHz	-	4400	-	pF
Output Capacitance		C_{oss}		-	645	-	
Reverse Transfer Capacitance		C_{rss}		-	20	-	
Switching Characteristics							
Gate Resistance		R_g	V_{GS} = 0V, V_{DS} = 0V, f =1MHz	-	1.6	-	Ω
Total Gate Charge		Q_g	V_{GS} = 10V, V_{DS} = 50V, I_D=20A	-	75	-	nC
Gate-Source Charge		Q_{gs}		-	17	-	
Gate-Drain Charge		Q_{gd}		-	13	-	
Turn-on Delay Time		$t_{d(on)}$	V_{GS} =10V, V_{DS} =50V, R_G = 3Ω, I_D= 20A	-	15.4	-	ns
Rise Time		t_r		-	13	-	
Turn-off Delay Time		$t_{d(off)}$		-	34	-	
Fall Time		t_f		-	6.2	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[2]		V_{SD}	I_F = 20A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current[1,5]		I_S	V_G=V_D=0V , Force Current	-	-	120	A
Body Diode Reverse Recovery Time		t_{rr}	I_F = 20A, dI/dt=100A/μs	-	55	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}		-	101	-	nC

Notes:

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=50V, V_{GS}=10V, L=0.4mH, I_{AS}=32A

4.The power dissipation is limited by 150°C junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

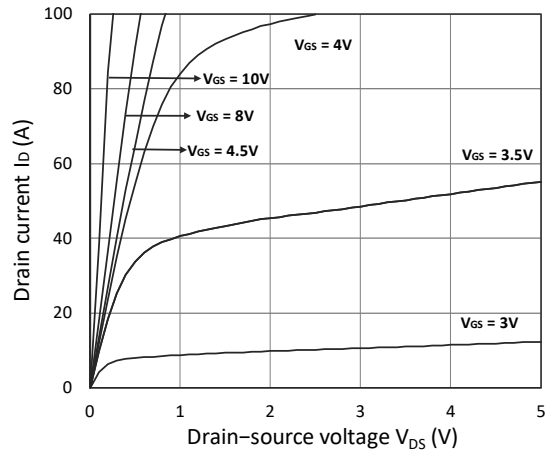


Figure 1. Output Characteristics

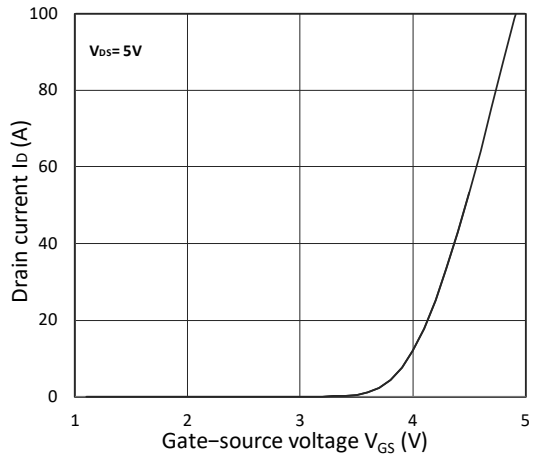


Figure 2. Transfer Characteristics

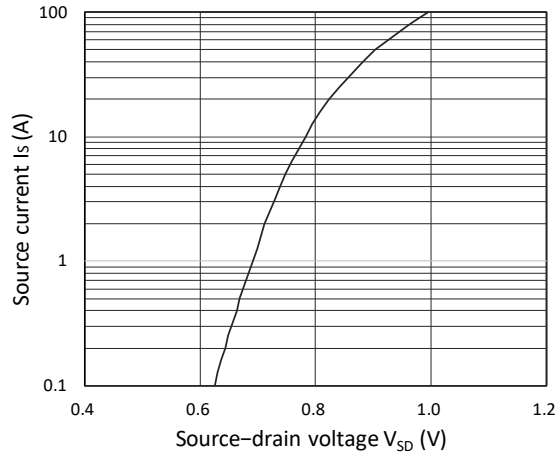


Figure 3. Forward Characteristics of Reverse

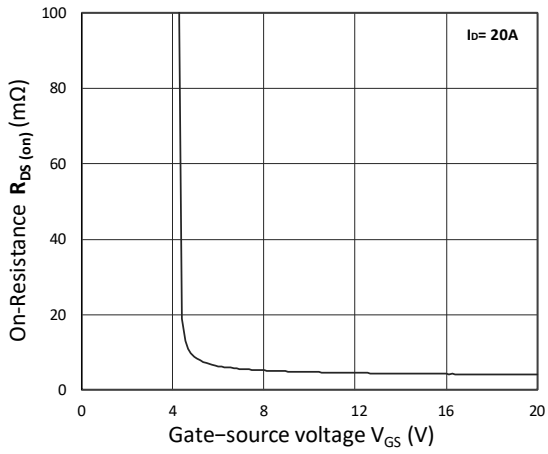


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

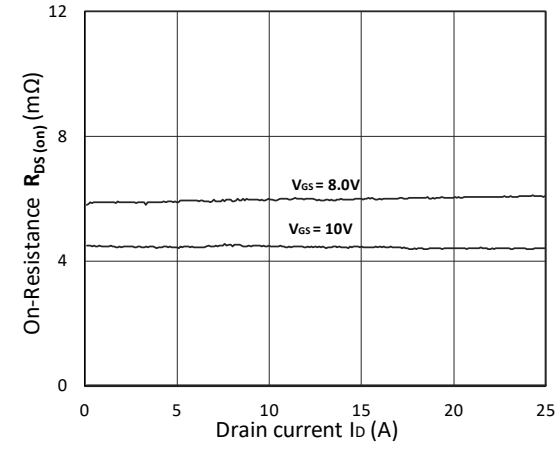


Figure 5. $R_{DS(ON)}$ vs. I_D

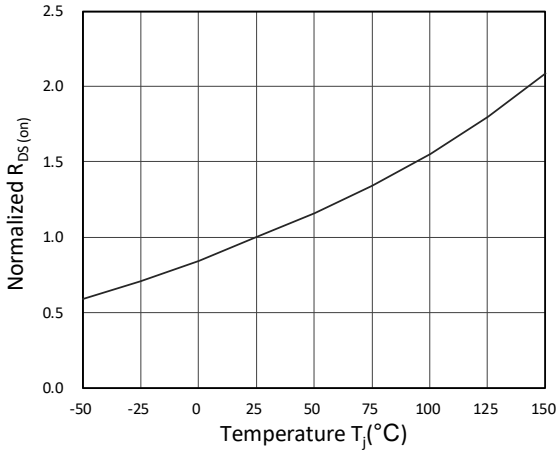


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

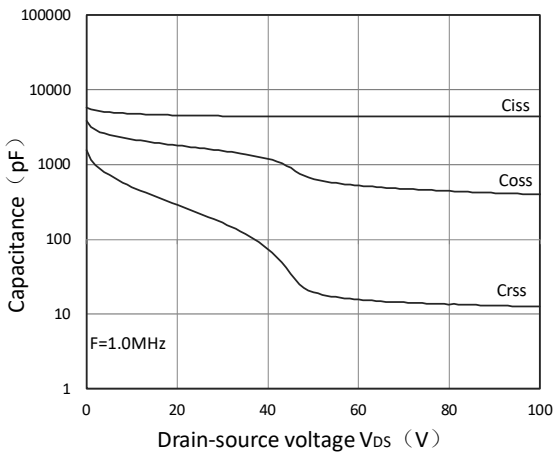


Figure 7. Capacitance Characteristics

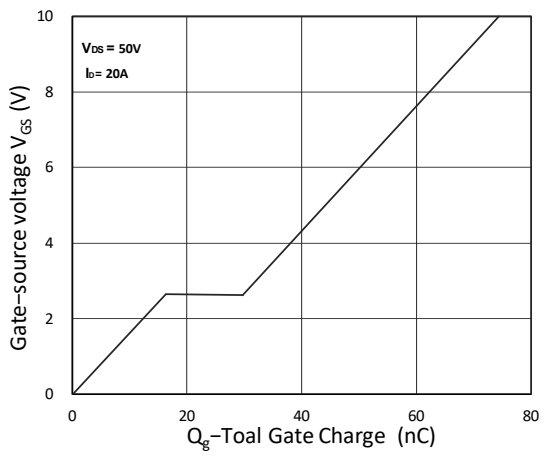


Figure 8. Gate Charge Characteristics

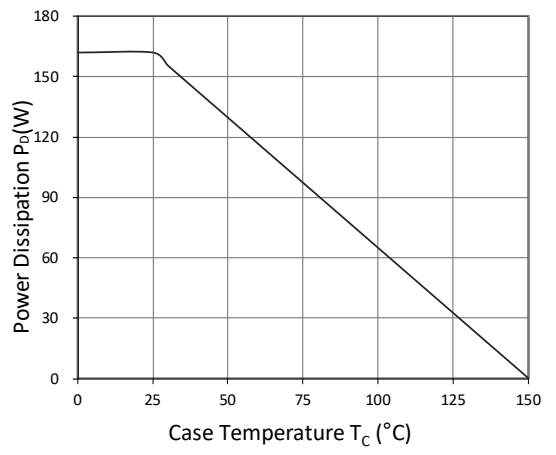


Figure 9. Power Dissipation

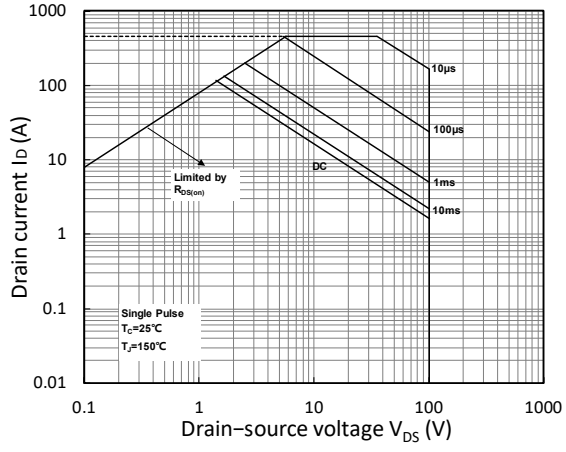


Figure10. Safe Operating Area

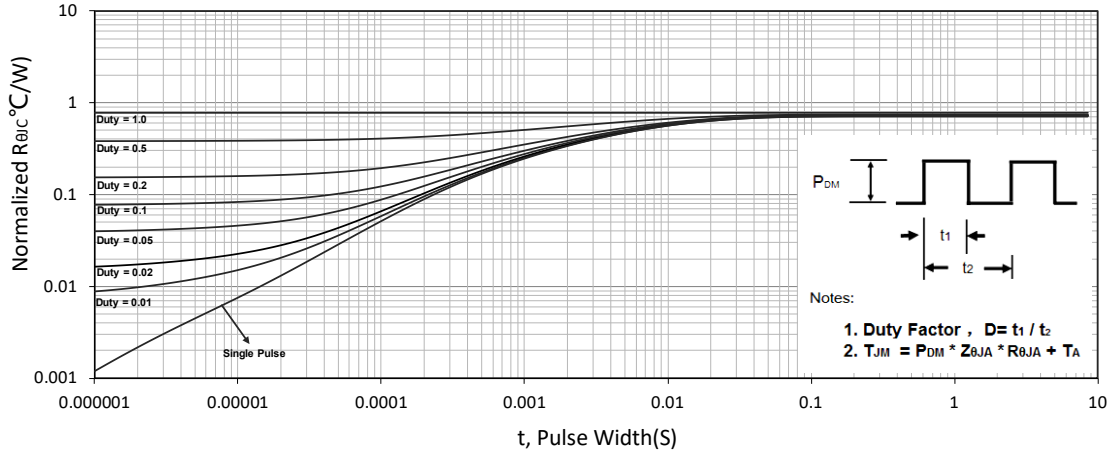


Figure 11. Normalized Maximum Transient Thermal Impedance

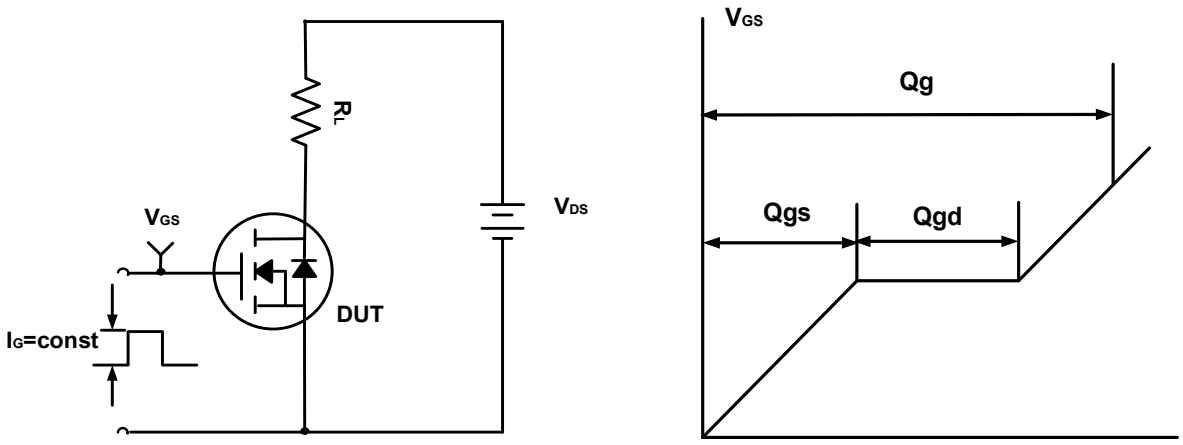


Figure A. Gate Charge Test Circuit & Waveforms

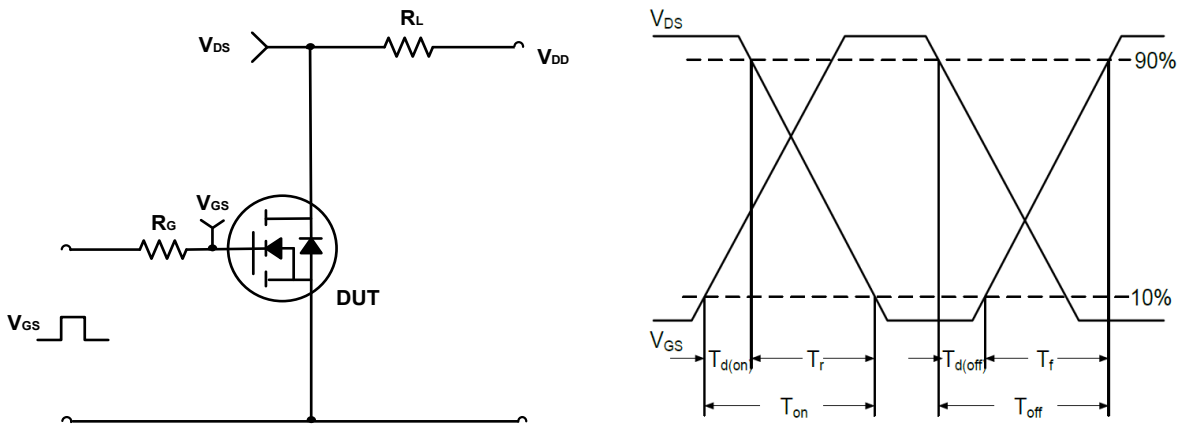


Figure B. Switching Test Circuit & Waveforms

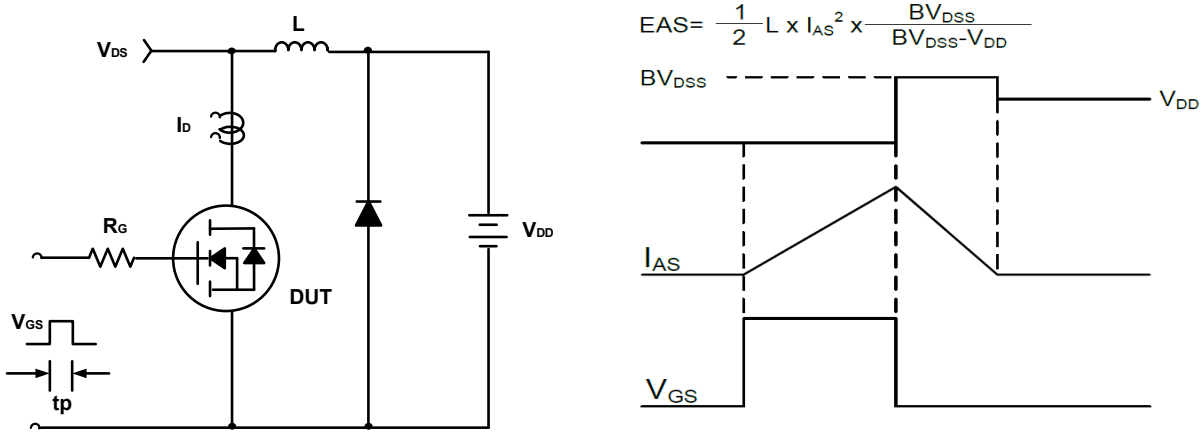
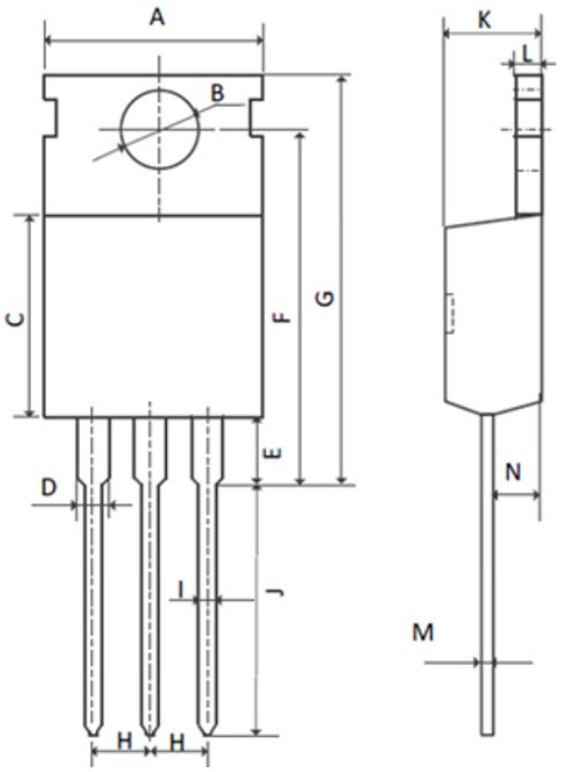


Figure C. Unclamped Inductive Switching Circuit & Waveforms



COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	9.70	10.30
B	3.40	3.80
C	8.80	9.40
D	1.17	1.47
E	2.60	3.50
F	15.10	16.70
G	19.55MAX	
H	2.54REF	
I	0.70	0.95
J	9.35	11.00
K	4.30	4.77
L	1.20	1.45
M	0.40	0.65
N	2.20	2.60