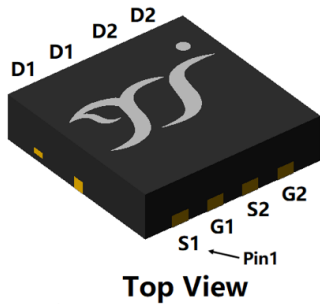
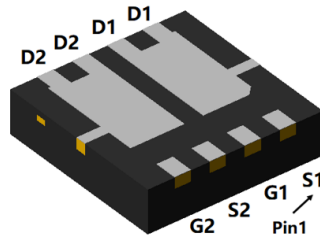


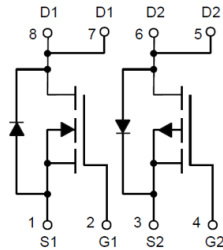
N-Channel and P-Channel Complementary MOSFET



Top View



Bottom View



DFN3333-8L

Product Summary NMOS

- V_{DS} 100V
- I_D 10A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<115m\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) $<125m\Omega$
- 100% EAS Tested

PMOS

- V_{DS} -100V
- I_D -5.5A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) $<325m\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) $<350m\Omega$
- 100% EAS Tested

General Description

- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC FAN
- Switching
- Motor drives

■ Absolute Maximum Ratings

Parameter	Conditions			Symbol	NMOS	PMOS	Unit
Drain-source Voltage				V _{DS}	100	-100	V
Gate-source Voltage				V _{GS}	±20	±20	V
Continuous Drain Current (Note 1,2)	Steady-State	T _A =25°C	NMOS: V _{GS} =10V	I _D	2.4	-1.5	A
			PMOS: V _{GS} =-10V				
		T _A =100°C	NMOS: V _{GS} =10V		1.5	-0.9	
			PMOS: V _{GS} =-10V				
Continuous Drain Current (Note 1,3)	Steady-State	T _C =25°C	NMOS: V _{GS} =10V, Chip limitation		10	-5.5	
			PMOS: V _{GS} =-10V, Chip limitation				
		T _C =100°C	NMOS: V _{GS} =10V		6.3	-3.4	
			PMOS: V _{GS} =-10V				
Pulsed Drain Current	T _C =25°C, t _p =100μs			I _{DM}	30	-18	
Maximum Body-Diode Continuous Current	T _C =25°C			I _S	10	-5.5	
Avalanche energy	NMOS: T _J =25°C, V _G =10V, R _G =25Ω, L=0.5mH, I _{AS} =5.6A			EAS	7.8	12.2	mJ
	PMOS: T _J =25°C, V _G =-10V, R _G =25Ω, L=0.5mH, I _{AS} =-7A						
Total Power Dissipation (Note 1,2)	Steady-State	T _A =25°C		P _D	1.66	1.66	W
		T _A =100°C			0.66	0.66	
Total Power Dissipation (Note 1,3)	Steady-State	T _C =25°C			31	24	
		T _C =100°C			12.5	9.6	
Junction and Storage Temperature Range				T _J , T _{STG}	-55~+150	-55~+150	°C



YJQ115NP10AJ

■ Thermal resistance

Parameter		Symbol	NMOS		PMOS		Units
			Typ	Max	Typ	Max	
Thermal Resistance Junction-to-Ambient (Note 2)	Steady-State	$R_{\theta JA}$	-	75	-	75	$^{\circ}\text{C/W}$
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	-	4	-	5.2	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ115NP10AJ	F1	115NP10A	5000	10000	100000	13" reel

■ NMOS Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA, T _j =25℃	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V, T _j =25℃	-	-	1	μA
		V _{DS} =100V, V _{GS} =0V, T _j =150℃	-	-	100	
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ± 20V, V _{DS} =0V, T _j =25℃	-	-	± 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA, T _j =25℃	1.3	1.8	2.3	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A, T _j =25℃	-	87	115	mΩ
		V _{GS} =4.5V, I _D =5A, T _j =25℃	-	88	125	
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V, T _j =25℃	-	0.9	1.2	V
Gate resistance	R _G	f=1MHz, T _j =25℃	-	1.7	-	Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz, T _j =25℃	-	851	-	pF
Output Capacitance	C _{oss}		-	30	-	
Reverse Transfer Capacitance	C _{rss}		-	28	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =10A, T _j =25℃	-	23	-	nC
Gate-Source Charge	Q _{gs}		-	2.8	-	
Gate-Drain Charge	Q _{gd}		-	6.7	-	
Reverse Recovery Charge	Q _{rr}	I _F =10A, di/dt=100A/us, V _{GS} =0V, V _R =50V, T _j =25℃	-	37	-	nC
Reverse Recovery Time	t _{rr}		-	32	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =50V, I _D =10A, R _L =5Ω, R _{GEN} =2.2Ω, T _j =25℃	-	8.5	-	ns
Turn-on Rise Time	t _r		-	20	-	
Turn-off Delay Time	t _{D(off)}		-	21	-	
Turn-off fall Time	t _f		-	2.2	-	



YJQ115NP10AJ

■ PMOS Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA, T _j =25℃	-100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V, T _j =25℃	-	-	-1	μA
		V _{DS} =-100V, V _{GS} =0V, T _j =150℃	-	-	-100	
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V, T _j =25℃	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA, T _j =25℃	-1	-1.5	-2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-5A, T _j =25℃	-	250	325	mΩ
		V _{GS} =-4.5V, I _D =-3A, T _j =25℃	-	260	350	
Diode Forward Voltage	V _{SD}	I _S =-5A, V _{GS} =0V, T _j =25℃	-	-	-1.2	V
Gate resistance	R _G	f=1MHz, T _j =25℃	-	5	-	Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-50V, V _{GS} =0V, f=1MHz, T _j =25℃	-	949	-	pF
Output Capacitance	C _{oss}		-	24	-	
Reverse Transfer Capacitance	C _{rss}		-	21	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-10V, V _{DS} =-50V, I _D =-5A, T _j =25℃	-	18.4	-	nC
Gate-Source Charge	Q _{gs}		-	1.4	-	
Gate-Drain Charge	Q _{gd}		-	2.2	-	
Reverse Recovery Charge	Q _{rr}	I _F =-5A, di/dt=100A/us V _{GS} =0V, V _R =-50V, T _j =25℃	-	48.7	-	nC
Reverse Recovery Time	t _{rr}		-	28.4	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DS} =-50V, I _D =-5A, R _L =10Ω, R _{GEN} =2.7Ω, T _j =25℃	-	7	-	ns
Turn-on Rise Time	t _r		-	32.4	-	
Turn-off Delay Time	t _{D(off)}		-	26.2	-	
Turn-off fall Time	t _f		-	6.4	-	

Note:

1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. The value of $R_{\theta JA}$ is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in² pad of 2oz. Copper, in the still air environment with $T_A=25^\circ C$. The maximum allowed junction temperature of $150^\circ C$. The value in any given application depends on the user's specific board design.
3. Thermal resistance from junction to soldering point (on the exposed drain pad).



YJQ115NP10AJ

■ NMOS Typical Electrical and Thermal Characteristics Diagrams

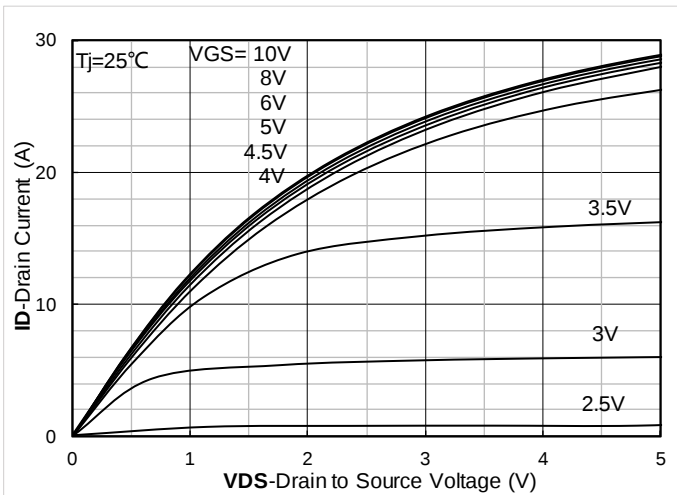


Figure 1. Output Characteristics; typical values

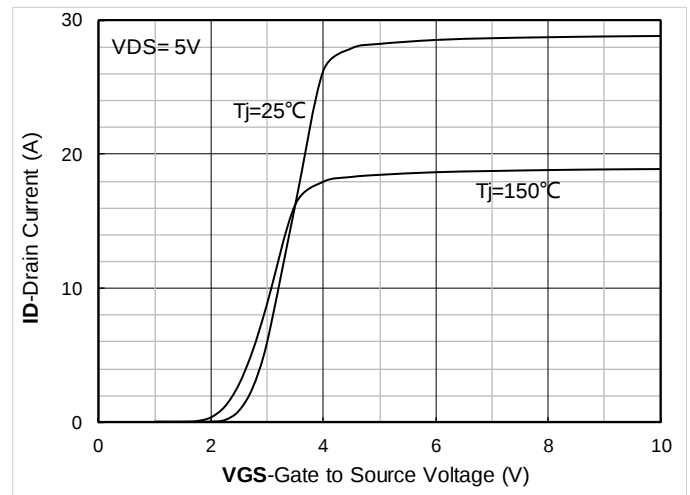


Figure 2. Transfer Characteristics; typical values

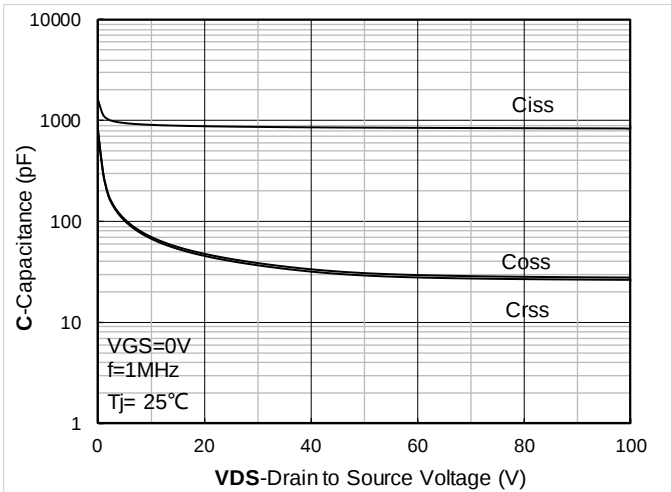


Figure 3. Capacitance Characteristics; typical values

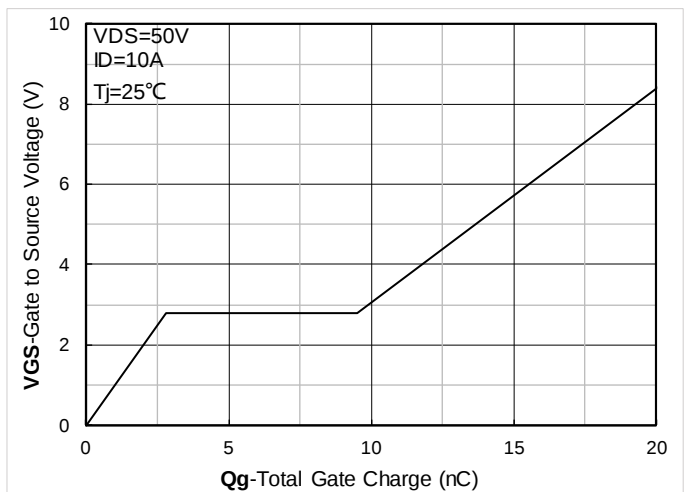


Figure 4. Gate Charge; typical values

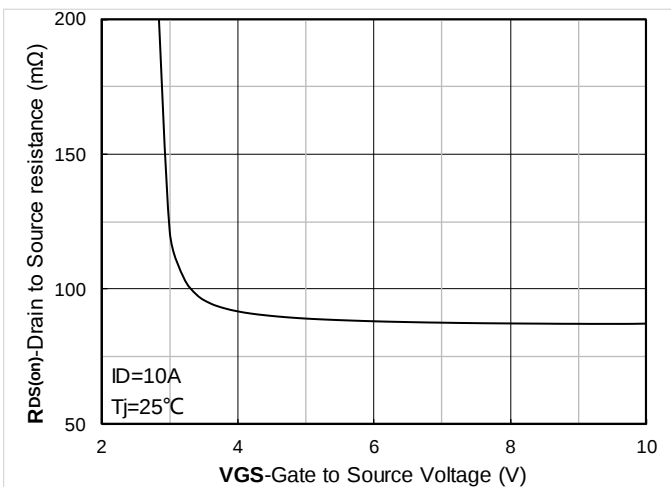


Figure 5. On-Resistance vs Gate to Source Voltage; typical values

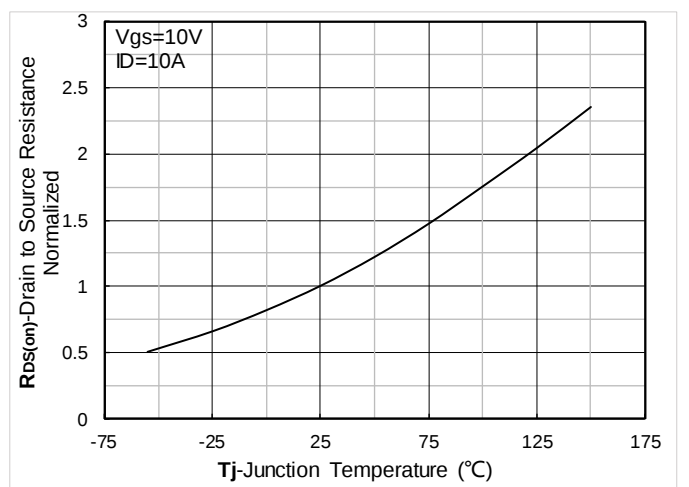


Figure 6. Normalized On-Resistance



YJQ115NP10AJ

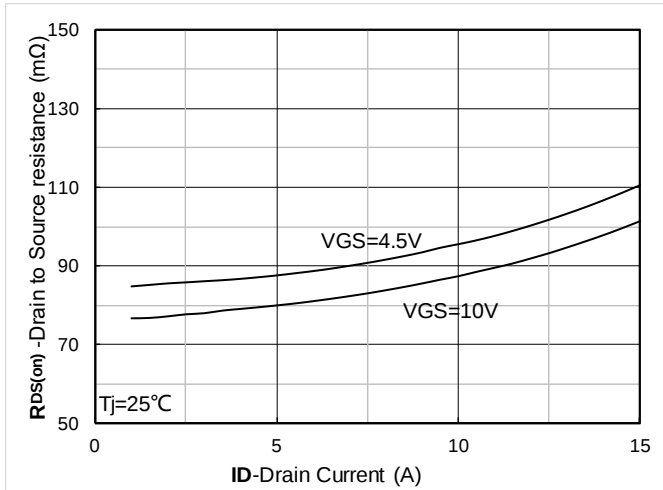


Figure 7. $R_{DS(on)}$ VS Drain Current; typical values

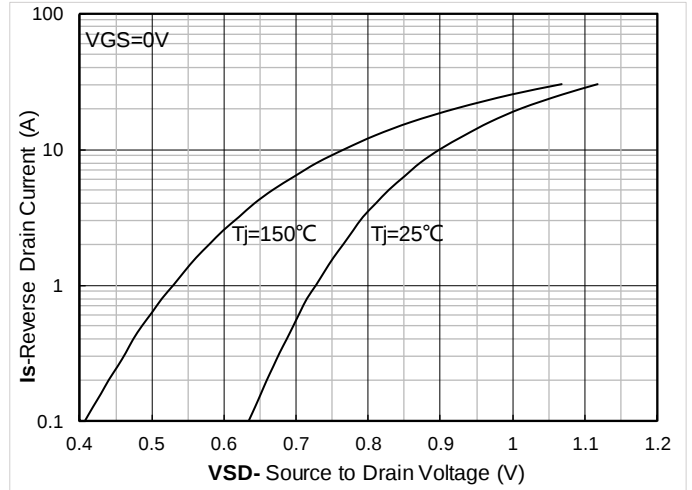


Figure 8. Forward characteristics of reverse diode; typical values

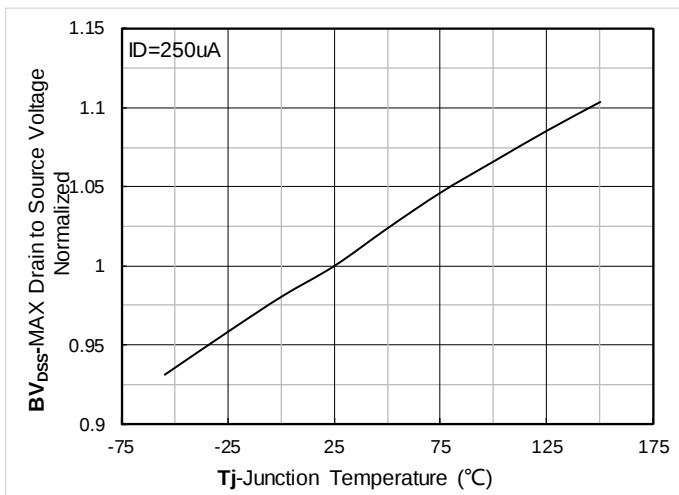


Figure 9. Normalized breakdown voltage

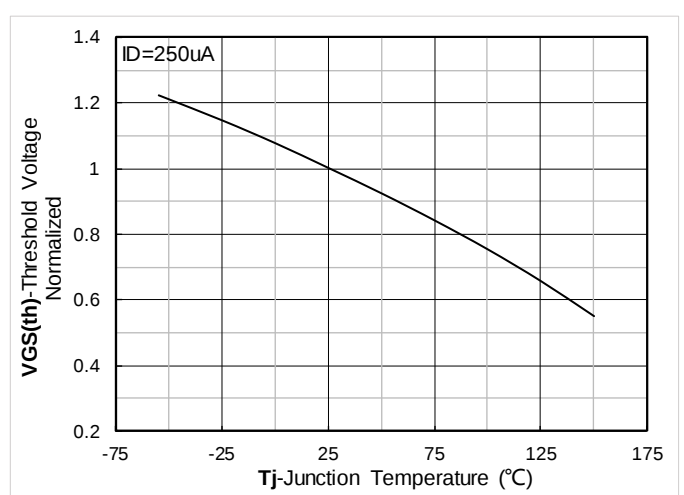


Figure 10. Normalized Threshold voltage

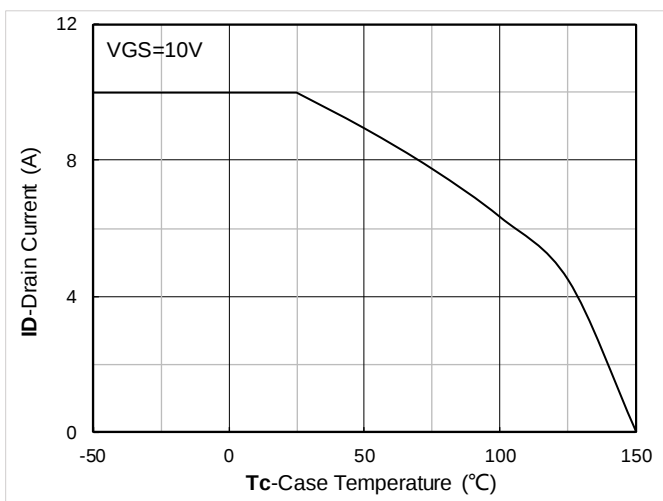


Figure 11. Current dissipation

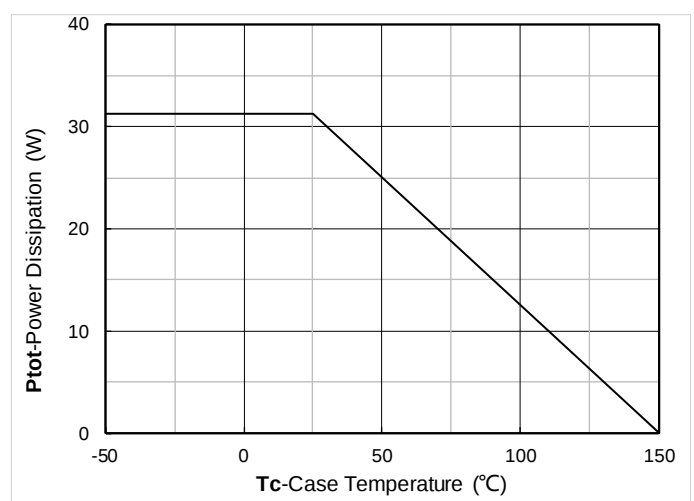


Figure 12. Power dissipation

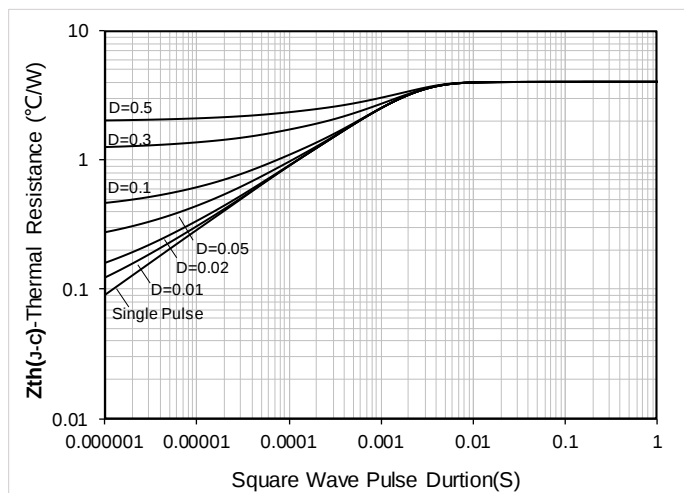


Figure 13. Maximum Transient Thermal Impedance

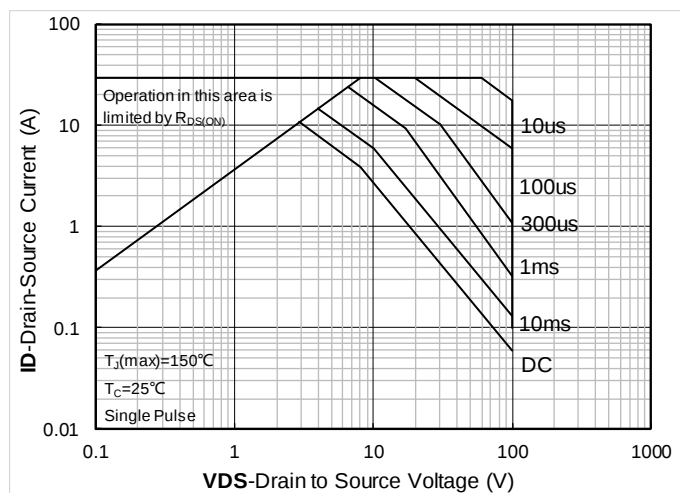


Figure 14. Safe Operation Area

PMOS Typical Electrical and Thermal Characteristics Diagrams

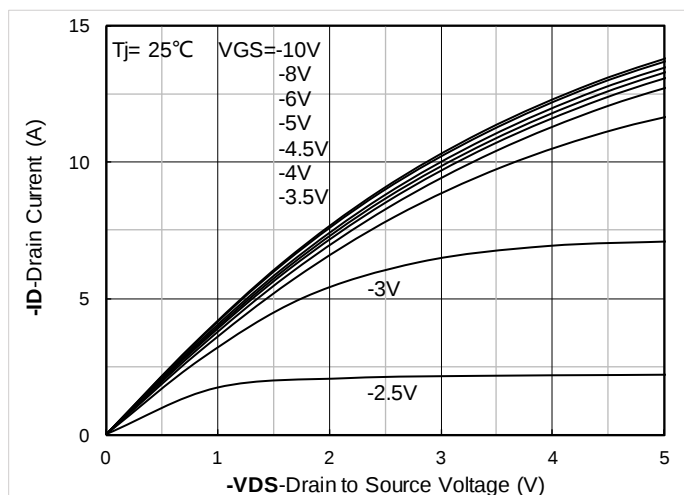


Figure 1. Output Characteristics; typical values

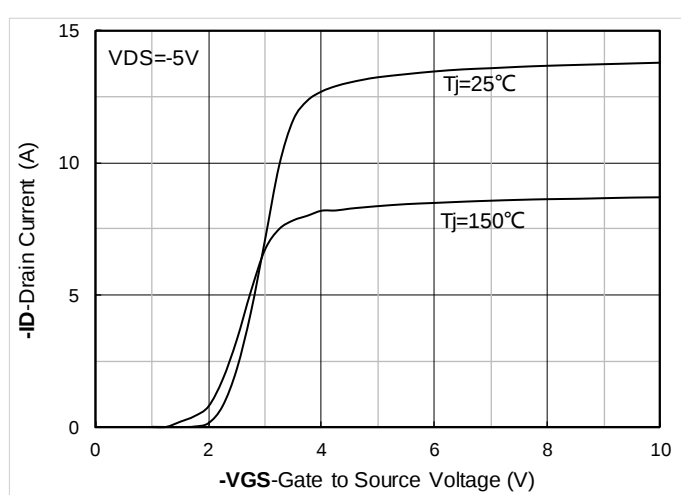


Figure 2. Transfer Characteristics; typical values

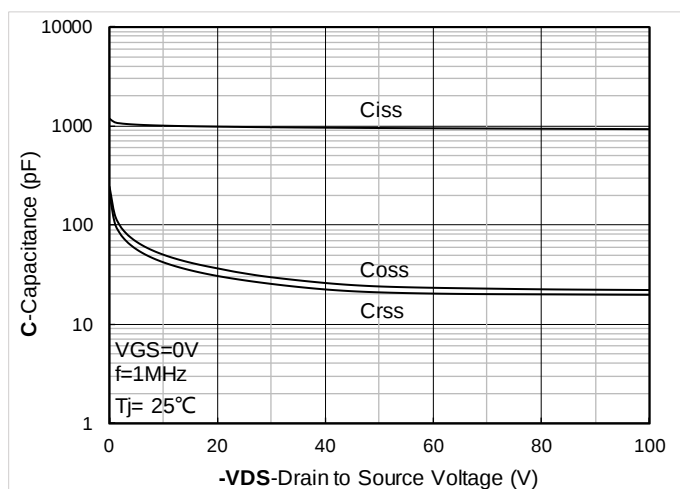


Figure 3. Capacitance Characteristics; typical values

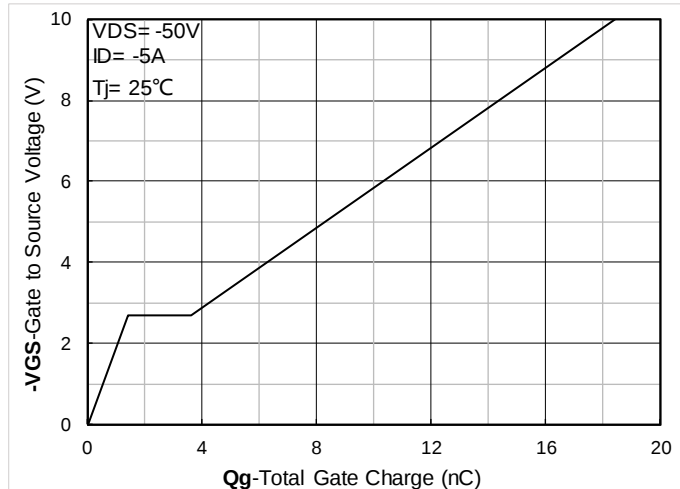


Figure 4. Gate Charge; typical values



YJQ115NP10AJ

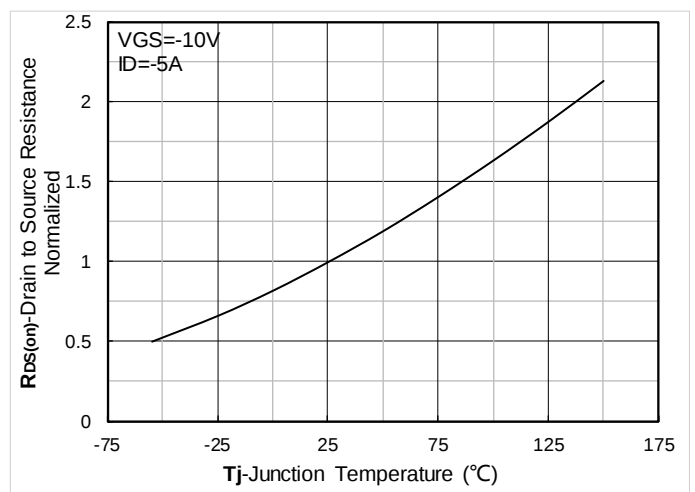
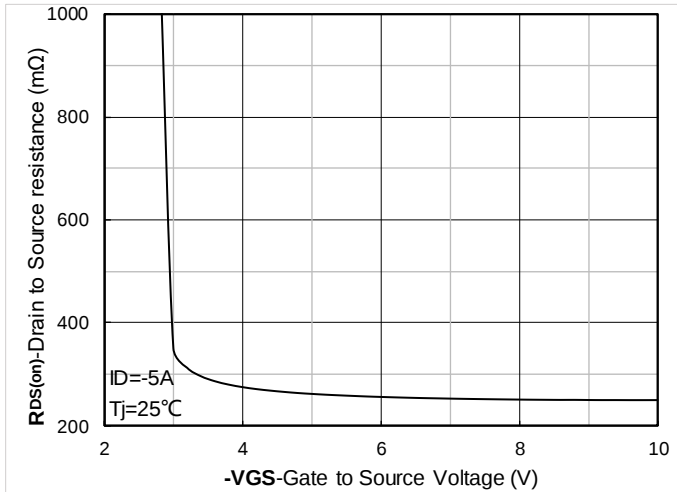


Figure 5. On-Resistance vs Gate to Source Voltage; typical values

Figure 6. Normalized On-Resistance

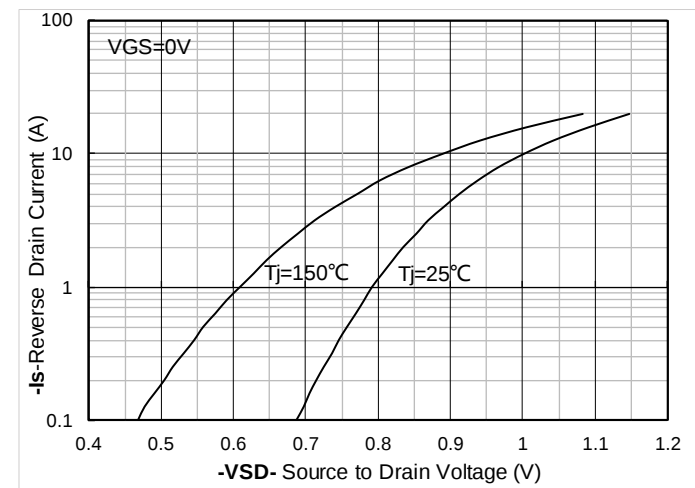
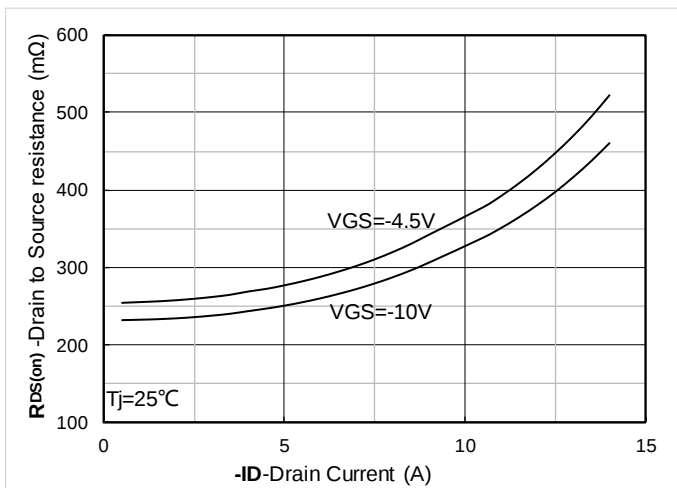


Figure 7. $R_{DS(on)}$ VS Drain Current; typical values

Figure 8. Forward characteristics of reverse diode; typical values

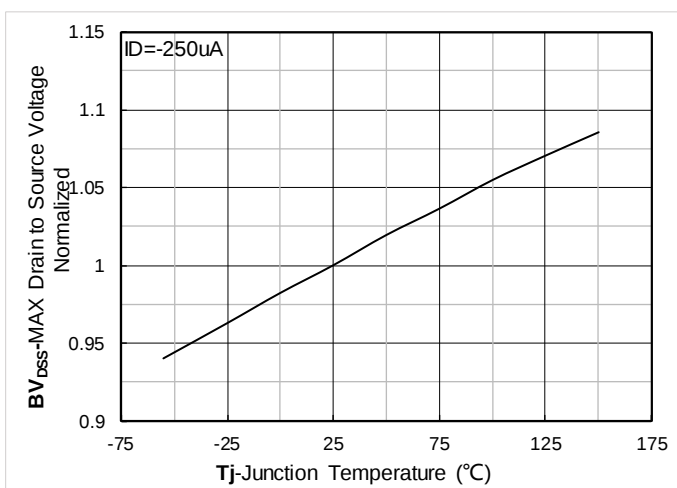


Figure 9. Normalized breakdown voltage

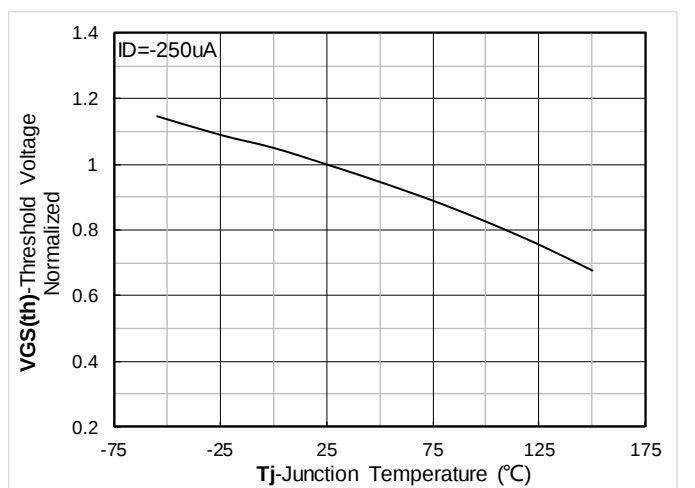


Figure 10. Normalized Threshold voltage

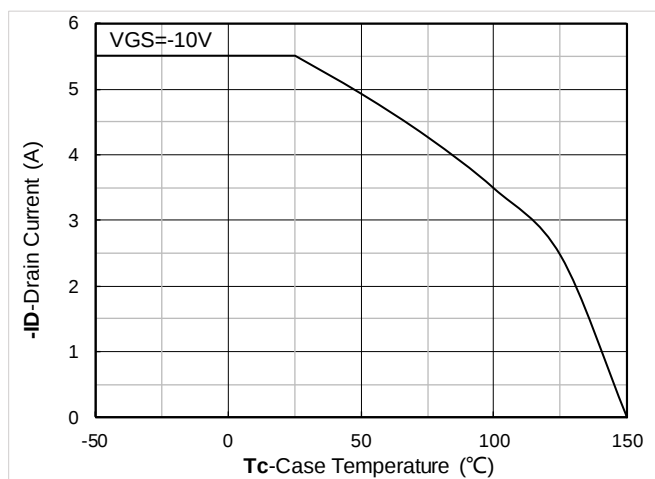


Figure 11. Current dissipation

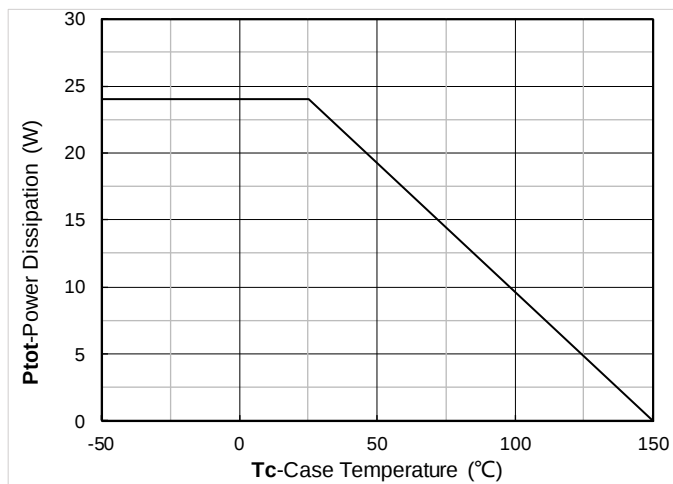


Figure 12. Power dissipation

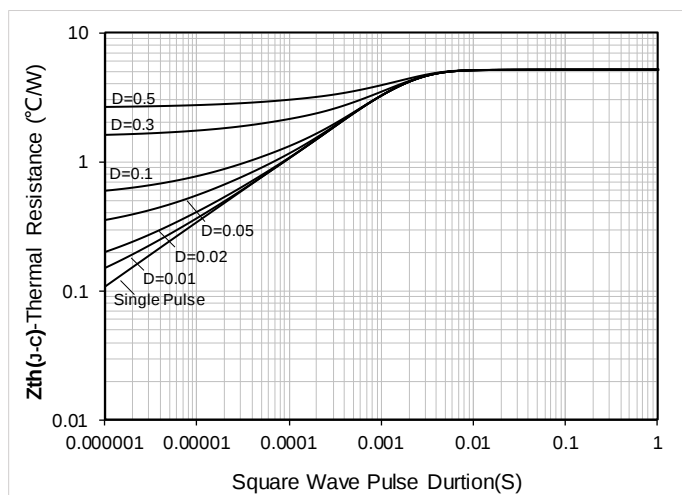


Figure 13. Maximum Transient Thermal Impedance

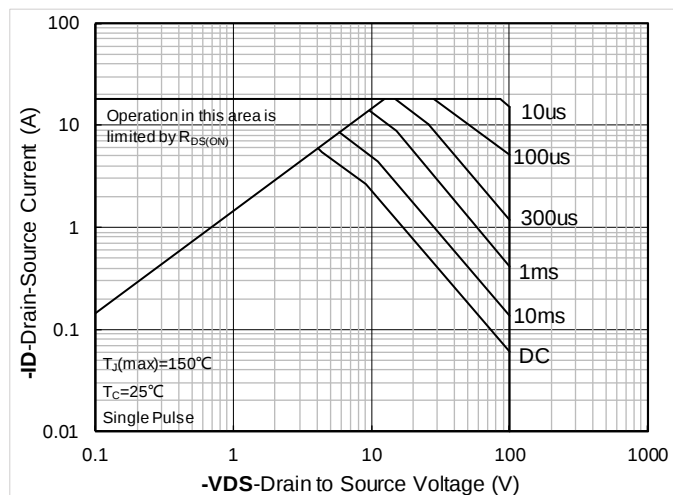
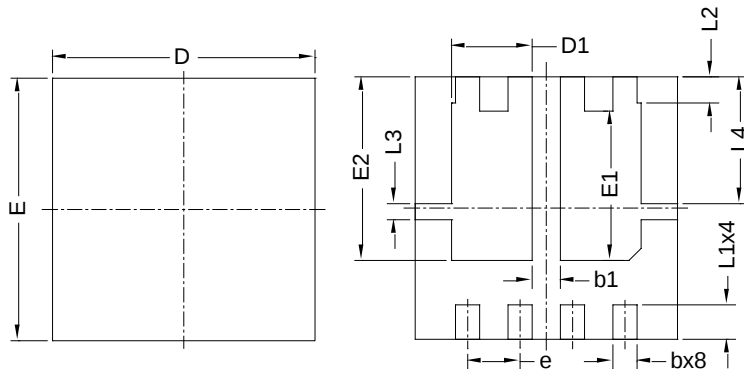


Figure 14. Safe Operation Area



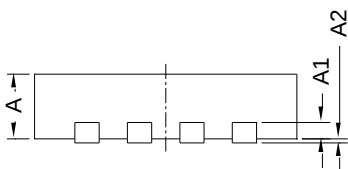
YJQ115NP10AJ

■ DFN3333-8L-B-0.8MM Package information

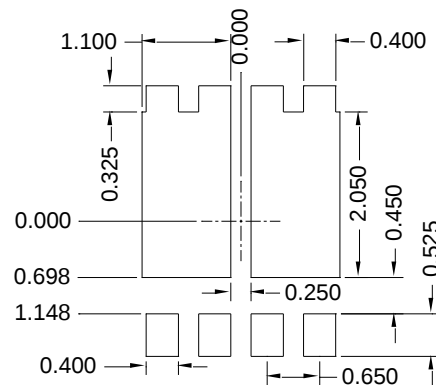


Top View
正面视图

Bottom View
背面视图



Side View
侧面视图



Suggested Solder Pad Layout
Top View

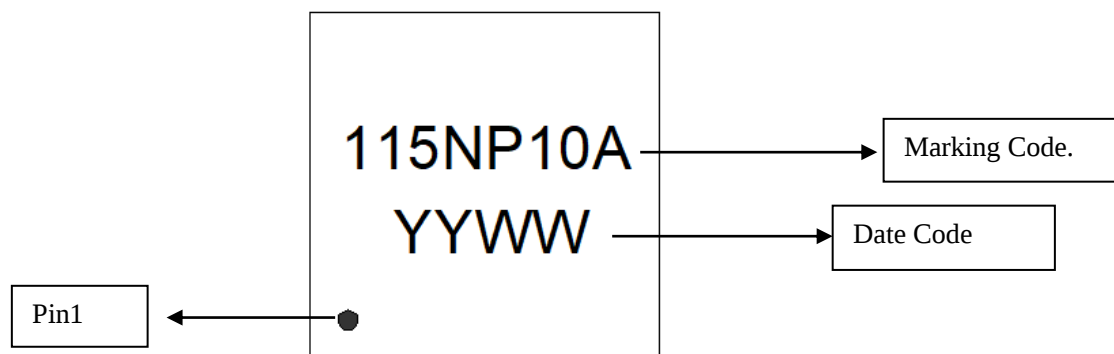
SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	3.15	3.25	3.35
E	3.15	3.25	3.35
A	0.70	0.80	0.90
A1	0.20 BSC		
A2			0.10
D1	0.90	1.00	1.10
E1	1.75	1.85	1.95
E2	2.175	2.275	2.375
L1	0.325	0.425	0.525
L2	0.325 BSC		
L3	0.200 BSC		
L4	1.570 BSC		
b	0.20	0.30	0.40
e	0.65 BSC		
b1	0.35 REF		

Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.10\text{mm}$.
3. The pad layout is for reference purposes only.



■Marking



Note:

1. All marking is at middle of the product body
2. All marking is in laser printing
3. 115NP10A is marking code, YYWW is date code, “YY” is year, “WW” is week
4. Body color: Black



Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <http://www.21yangjie.com> , or consult your nearest Yangjie's sales office for further assistance.