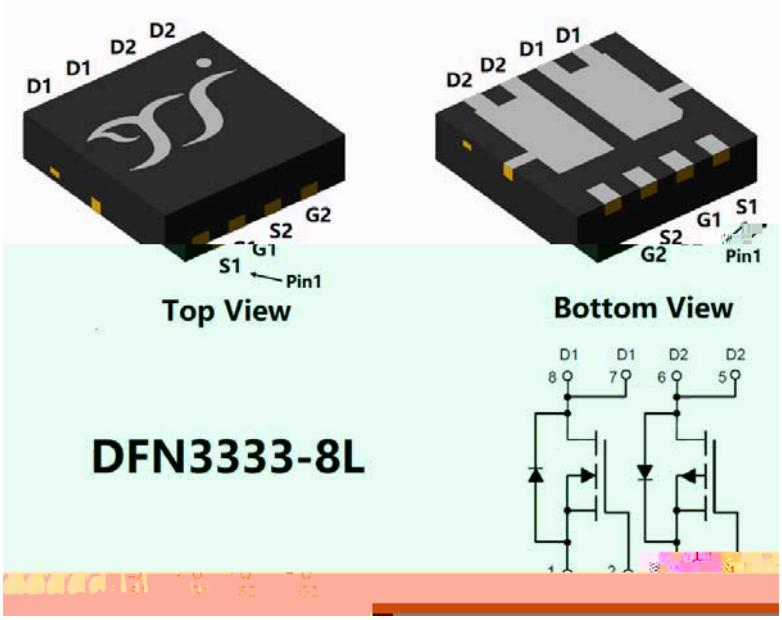
YJQ016NP04A

RoHS
COMPLIANT



$_{GS}$=4.5V) 21mΩ

PMOS

- V_{DS} -40V
- I_D -18A
- $R_{DS(ON)}$(at V_{GS}=-10V) 29mΩ
- $R_{DS(ON)}$(at V_{GS}=-4.5V) 41mΩ
- 100% EAS Tested

General Description

- Trench Power LV MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- High Speed switching
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Wireless charger
- Load switching
- Power management

■ Absolute Maximum Ratings (T_A=25 unless otherwise noted)

Parameter		Symbol	NMOS	PMOS	Unit
Drain-source Voltage		V_{DS}	40	-40	V
Gate-source Voltage		V_{GS}	±20	±20	V
Drain Current	T_A=25	I_D	7	-5	A
	T_A=100		4	-3	
	T_C=25		24	-18	
	T_C =100		15	-11	
Pulsed Drain Current [A]		I_{DM}	96	-72	A
Avalanche energy [B]		EAS	6.25	6.25	mJ
Total Power Dissipation [C]	T_A=25	P_D	1.6	1.6	W
	T_A=100		0.6	0.6	
	T_C=25		18.9	19.5	
	T_C =100		7.5	7.8	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55 +150	-55 +150	

■Thermal resistance

Parameter		Symbol	NMOS		PMOS		Units
			Typ	Max	Typ	Max	
Thermal Resistance Junction-to-Ambient	Steady-State	$R_{\theta JA}$	60	75	60	75	/W
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	5.5	6.6	5.3	6.4	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ016NP04A	F1	Q016NP04A	5000	10000	100000	13'' reel

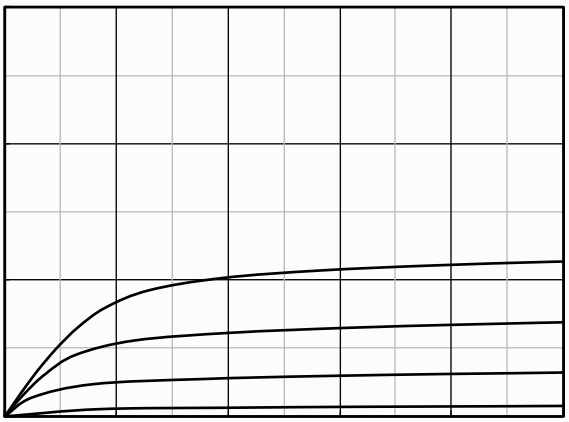
■ NMOS Electrical Characteristics (T_J=25 unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	-	-	1	μA
		V_{DS}=40V, V_{GS}=0V, Tj=150	-	-	100	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.0	1.5	2.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=15A	-	11.5	16	mΩ
		V_{GS}=4.5V, I_D=8A	-	15	21	
Diode Forward Voltage	V_{SD}	I_S=15A, V_{GS}=0V	-	-	1.2	V
Gate resistance	R_G	f=1MHz	-	3	-	Ω
Maximum Body-Diode Continuous Current	I_S		-	-	24	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=20V, V_{GS}=0V, f=1MHz	-	965	-	pF
Output Capacitance	C_{oss}		-	96	-	
Reverse Transfer Capacitance	C_{rss}		-	85	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=20V,I_D=15A	-	21.4	-	nC
Gate-Source Charge	Q_{gs}		-	3.4	-	
Gate-Drain Charge	Q_{gd}		-	5	-	
Reverse Recovery Charge	Q_{rr}	I_F=15A, di/dt=100A/us	-	6.3	-	nC
Reverse Recovery Time	t_{rr}		-	11.7	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=20V, I_D=15A R_{GEN}=2.2Ω	-	7.8	-	ns
Turn-on Rise Time	t_r		-	143	-	
Turn-off Delay Time	$t_{D(off)}$		-	25.6	-	
Turn-off fall Time	t_f		-	5.2	-	

■ PMOS Electrical Characteristics (T_J=25 unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=-250μA	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40V, V_{GS}=0V	-	-	-1	μA
		V_{DS}=-40V, V_{GS}=0V, Tj=150	-	-	-100	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ± 20V, V_{DS}=0V	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-1.1	-1.6	-2.1	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-15A	-	22	29	mΩ
		V_{GS}=-4.5V, I_D=-8A	-	30	41	mΩ

■ NMOS Typical Electrical and Thermal Characteristics Diagrams



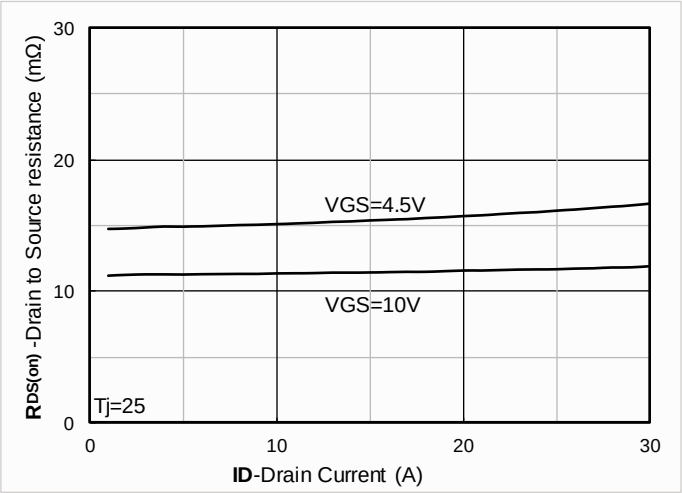


Figure 7. $R_{DS(on)}$ VS Drain Current

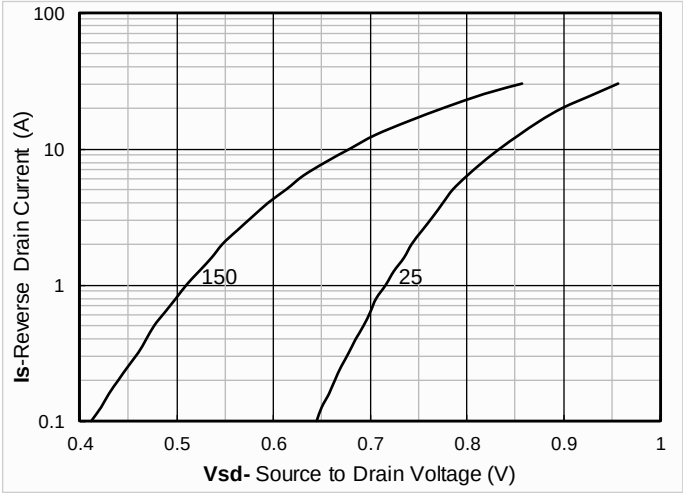


Figure 8. Forward characteristics of reverse diode

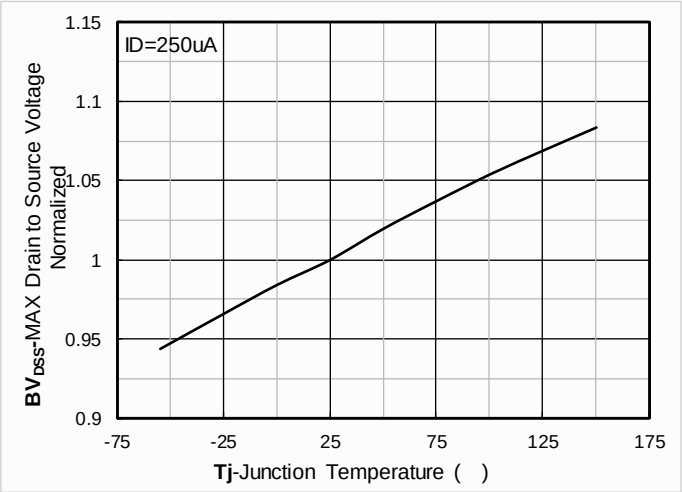


Figure 9. Normalized breakdown voltage

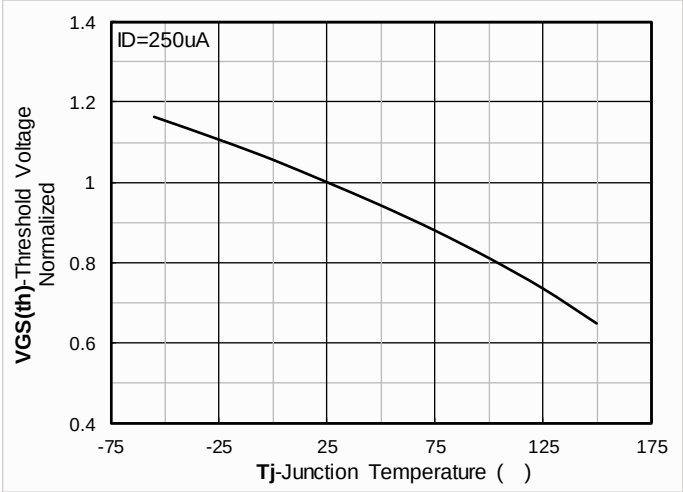


Figure 10. Normalized Threshold voltage

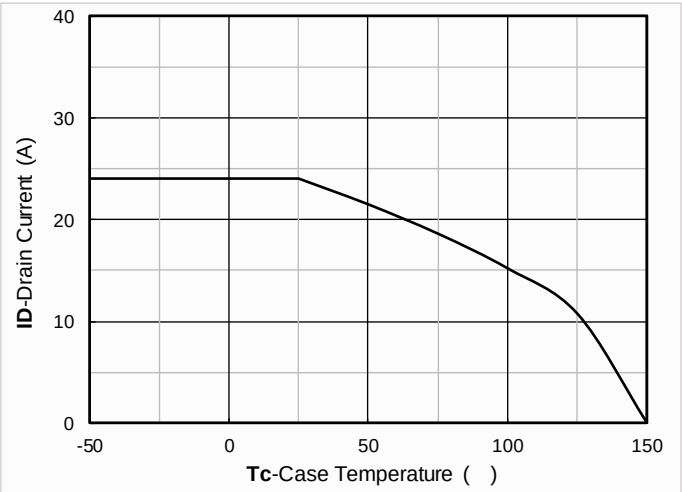


Figure 11. Current dissipation

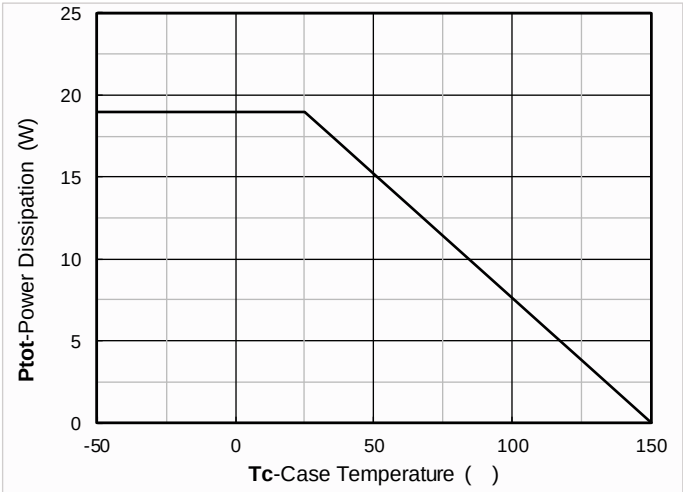


Figure 12. Power dissipation

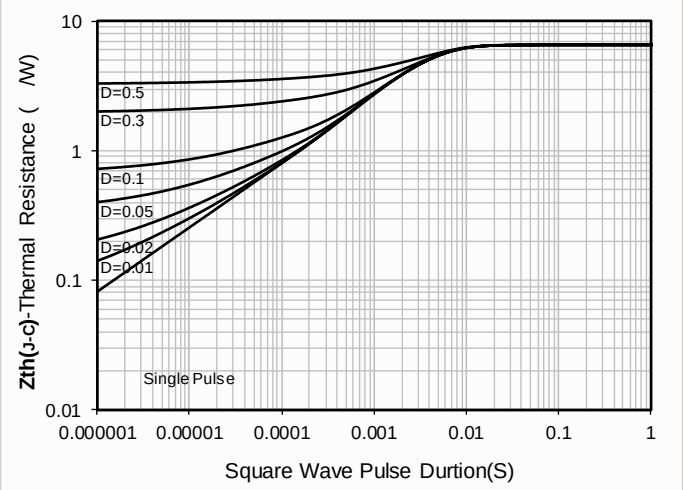


Figure 13. Maximum Transient Thermal Impedance

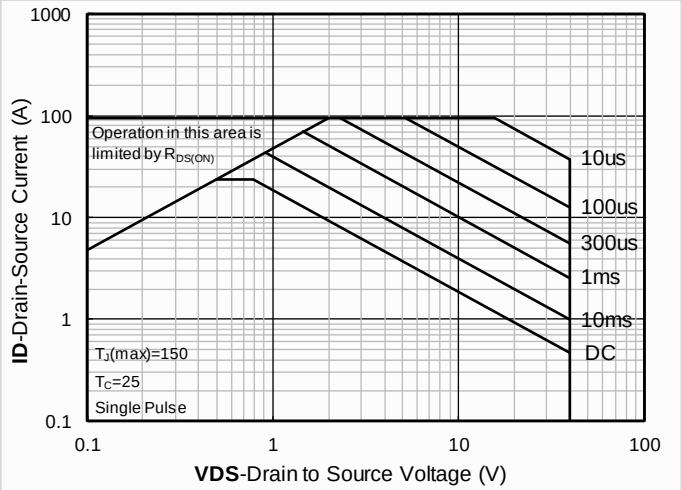


Figure 14. Safe Operation Area

■ PMOS Typical Electrical and Thermal Characteristics Diagrams

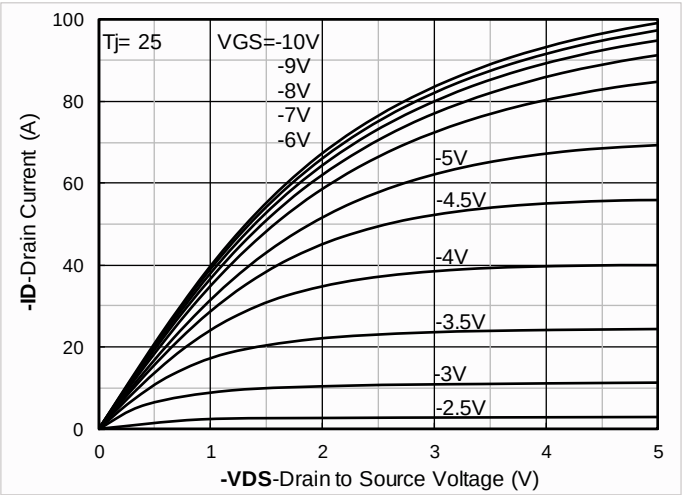


Figure 1. Output Characteristics

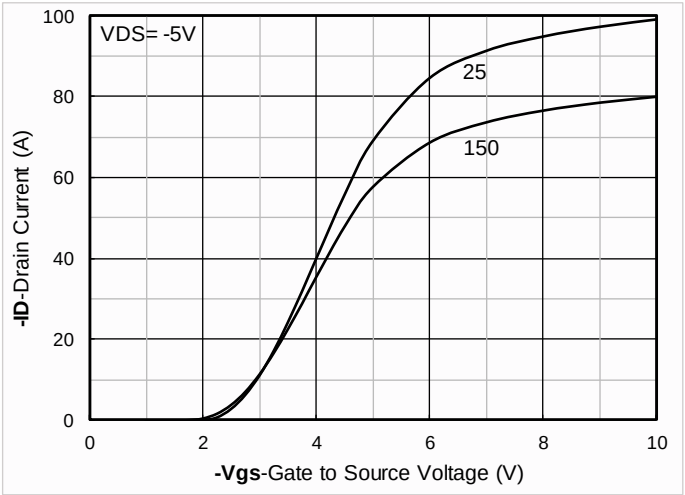


Figure 2. Transfer Characteristics

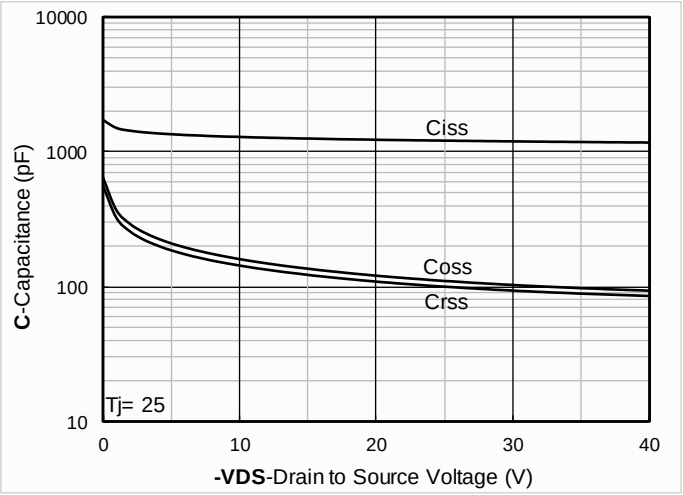


Figure 3. Capacitance Characteristics

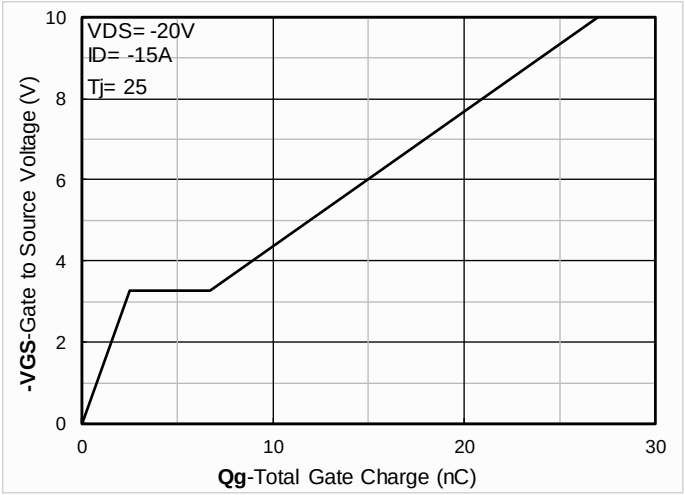


Figure 4. Gate Charge

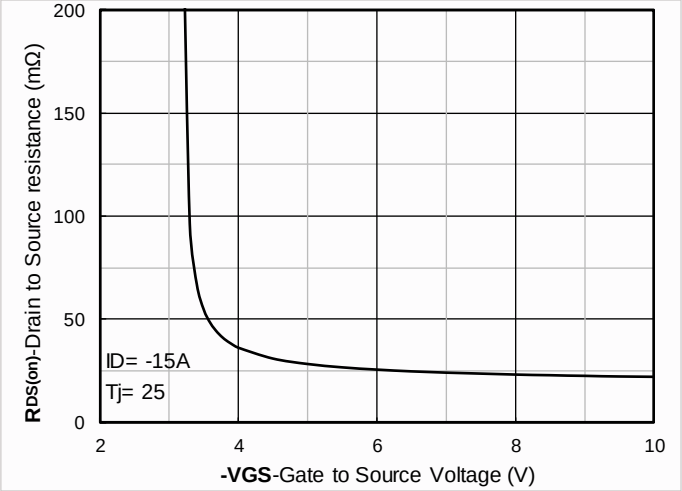


Figure 5. On-Resistance vs Gate to Source Voltage

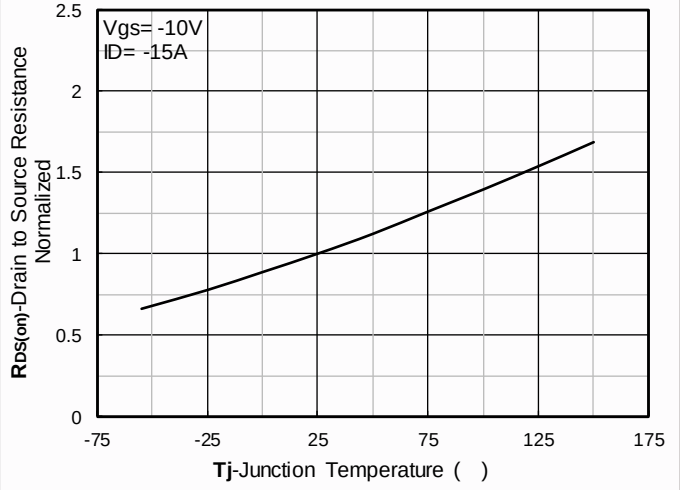


Figure 6. Normalized On-Resistance

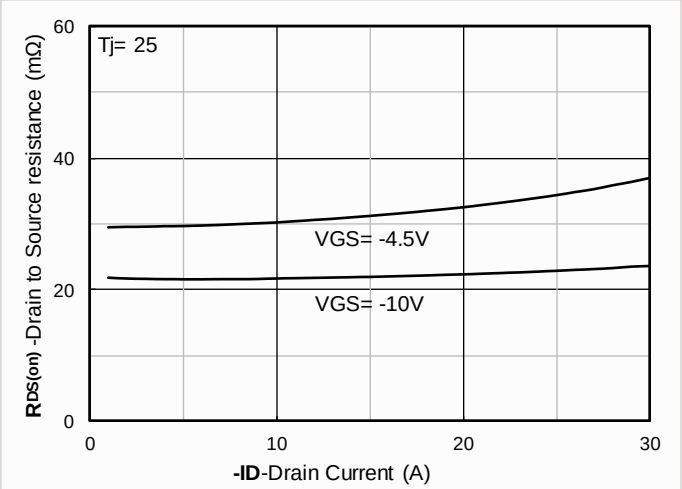


Figure 7. $R_{DS(on)}$ VS Drain Current

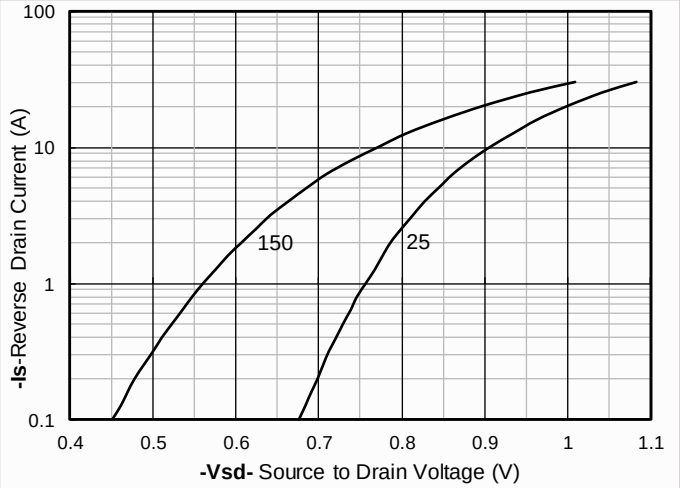


Figure 8. Forward characteristics of reverse diode

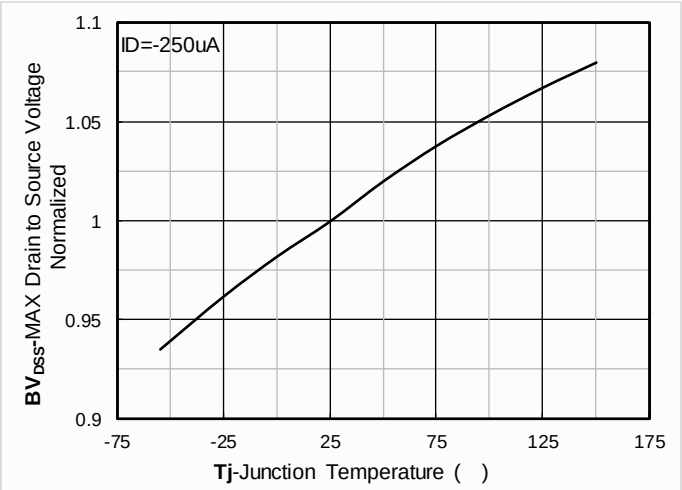


Figure 9. Normalized breakdown voltage

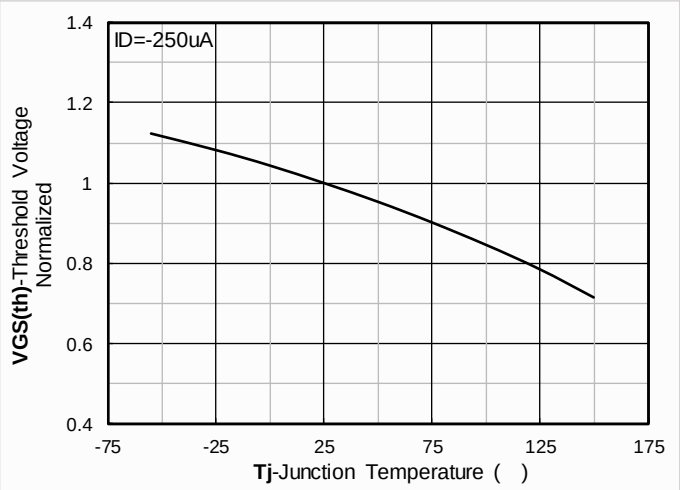


Figure 10. Normalized Threshold voltage

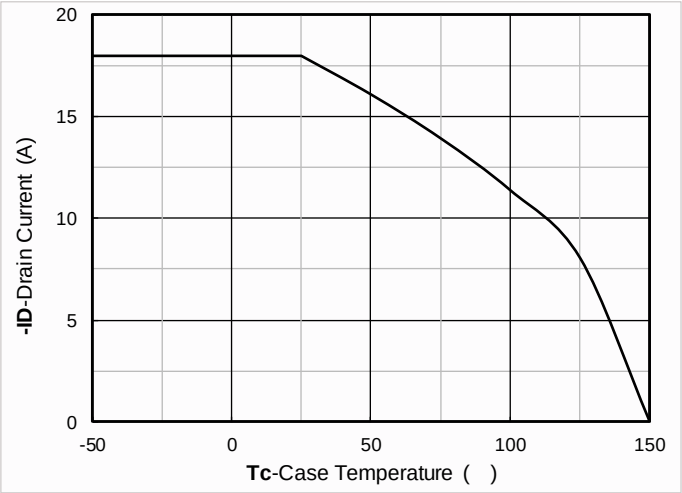


Figure 11. Current dissipation

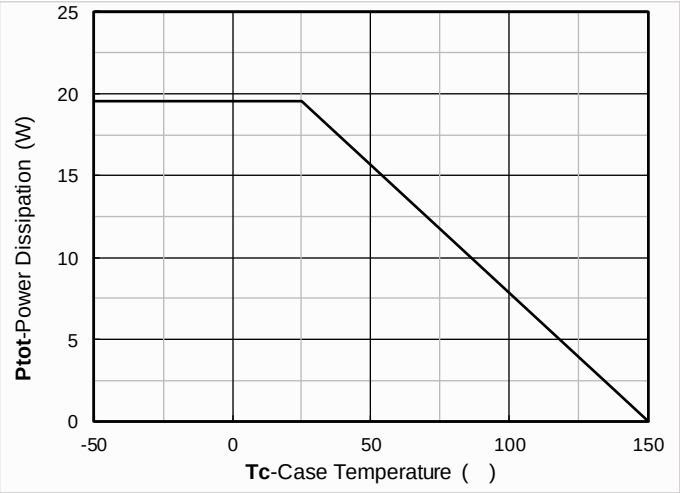
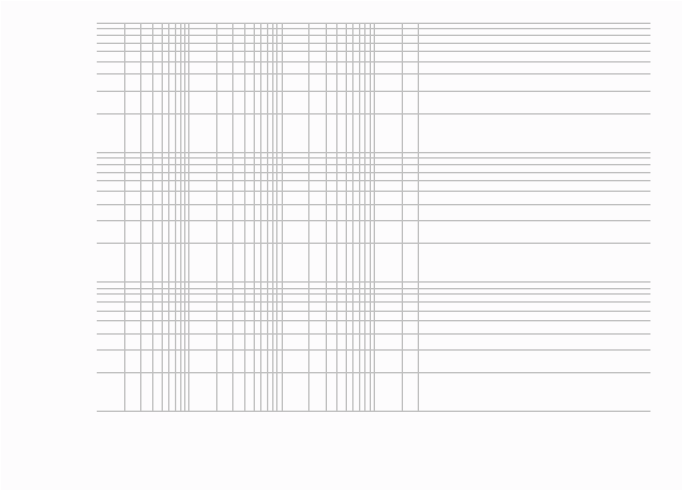
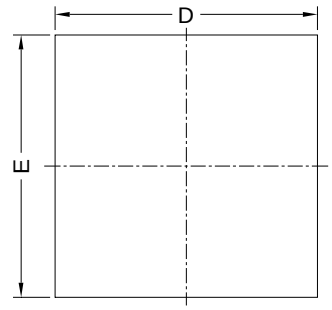


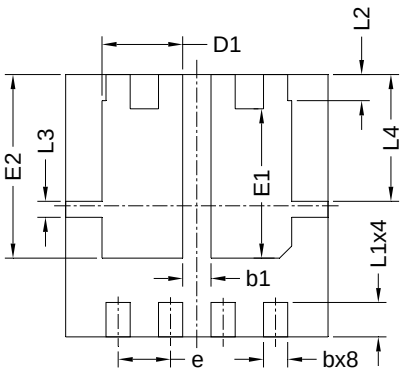
Figure 12. Power dissipation



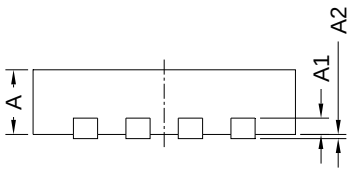
■ DFN3333-8L-B-0.8MM Package information



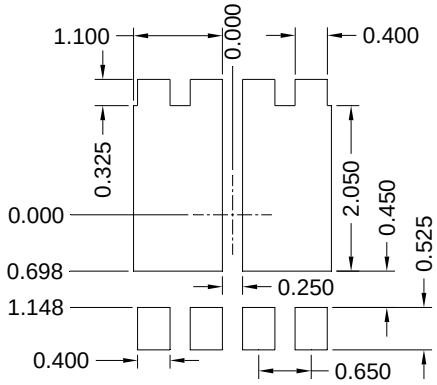
Top View



Bottom View



Side View



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:±0.10mm.
3.The pad layout is for reference purposes only.

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 with 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.