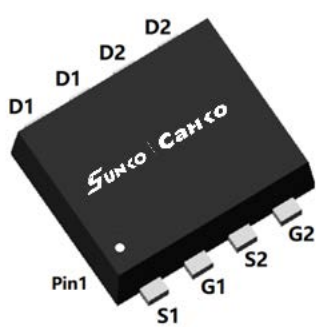
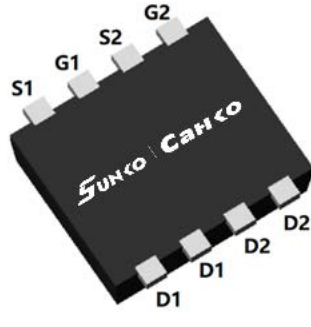


N-Channel and P-Channel Complementary MOSFET

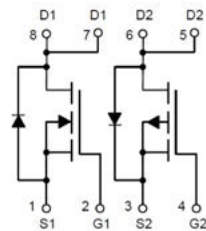


Top View



Bottom View

PDFN3030-8L



Product Summary

NMOS

• V_{DS}	30V
• I_D	6A
• $R_{DS(ON)}$ (at $V_{GS}=10V$)	<26m Ω
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	<40m Ω

PMOS

• V_{DS}	-30V
• I_D	-4A
• $R_{DS(ON)}$ (at $V_{GS}=-10V$)	<43m Ω
• $R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	<70m Ω

General Description

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation

Applications

- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	NMOS	PMOS	Unit
Drain-source Voltage		V_{DS}	30	-30	V
Gate-source Voltage		V_{GS}	± 20	± 20	V
Drain Current	$T_A=25^\circ\text{C}$	I_D	6	-4	A
	$T_A=100^\circ\text{C}$		3.8	-2.5	
Pulsed Drain Current ^A		I_{DM}	35	-30	A
Total Power Dissipation ^B	$T_A=25^\circ\text{C}$	P_D	1.25	1.25	W
	$T_A=100^\circ\text{C}$		0.5	0.5	

■ Thermal resistance

Parameter		Symbol	NMOS		PMOS		Units
			Typ	Max	Typ	Max	
Thermal Resistance Junction-to-Ambient ^C	Steady-State	$R_{\theta JA}$	80	100	80	100	$^\circ\text{C/W}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SCU4606A	F1	Q4606A	3000	30000	120000	7" reel

SCU4606A

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
		V _{DS} =30V, V _{GS} =0V, T _j =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	1.5	2.2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =6A	-	20	26	mΩ
		V _{GS} =4.5V, I _D =4A	-	30	40	
Diode Forward Voltage	V _{SD}	I _S =6A, V _{GS} =0V	-	-	1.2	V
Gate resistance	R _G	f=1MHz	-	2.5	-	Ω
Maximum Body-Diode Continuous Current	I _S		-	-	6	A
Dynamic Parameters						
Input Capacitance	C _{iSS}	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	380	-	pF
Output Capacitance	C _{oSS}		-	80	-	
Reverse Transfer Capacitance	C _{rSS}		-	60	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =6A	-	9	-	nC
Gate-Source Charge	Q _{gs}		-	2	-	
Gate-Drain Charge	Q _{gd}		-	2	-	
Reverse Recovery Charge	Q _{rr}	I _F =6A, di/dt=100A/us	-	1	-	nC
Reverse Recovery Time	t _{rr}		-	7	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =15V, I _D =6A R _{GEN} =3Ω	-	6	-	ns
Turn-on Rise Time	t _r		-	41	-	
Turn-off Delay Time	t _{D(off)}		-	11	-	
Turn-off fall Time	t _f		-	34	-	

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V	-	-	-1	μA
		V _{DS} =-30V, V _{GS} =0V, T _J =150°C	-	-	-100	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	-	-	±100	nA

SCU4606A

Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-1	-1.5	-2.4	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-4A	-	33	43	mΩ
		V _{GS} =-4.5V, I _D =-4A	-	50	70	
Diode Forward Voltage	V _{SD}	I _S =-4A, V _{GS} =0V	-	-	-1.2	V
Gate resistance	R _G	f=1MHz	-	15	-	Ω
Maximum Body-Diode Continuous Current	I _S		-	-	-4	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHz	-	490	-	pF
Output Capacitance	C _{oss}		-	75	-	
Reverse Transfer Capacitance	C _{rss}		-	60	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-10V, V _{DS} =-15V, I _D =-4A	-	9	-	nC
Gate-Source Charge	Q _{gs}		-	1.5	-	
Gate-Drain Charge	Q _{gd}		-	2.3	-	
Reverse Recovery Charge	Q _{rr}	I _F =-4A, di/dt=100A/us	-	12	-	nC
Reverse Recovery Time	t _{rr}		-	32	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-15V, ID=-4A R _{GEN} =2.5Ω	-	9	-	ns
Turn-on Rise Time	t _r		-	3	-	
Turn-off Delay Time	t _{D(off)}		-	29	-	
Turn-off fall Time	t _f		-	15	-	

A. Repetitive rating; pulse width limited by max. junction temperature.

B. P_d is based on max. junction temperature, using junction-case thermal resistance.

C. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 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.

■ NMOS Typical Electrical and Thermal Characteristics Diagrams

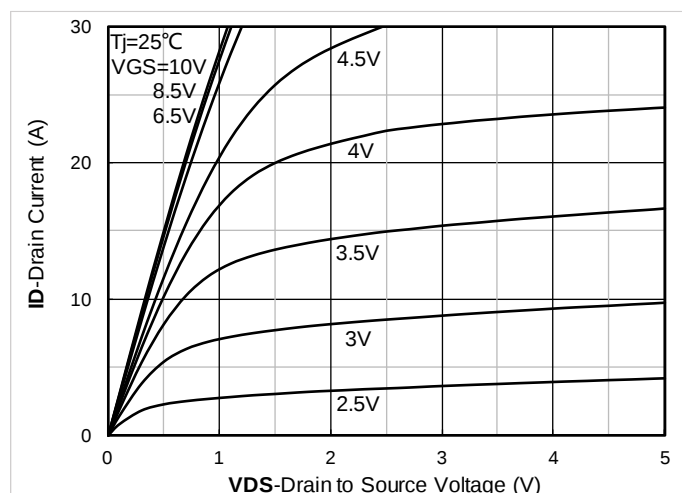


Figure 1. Output Characteristics

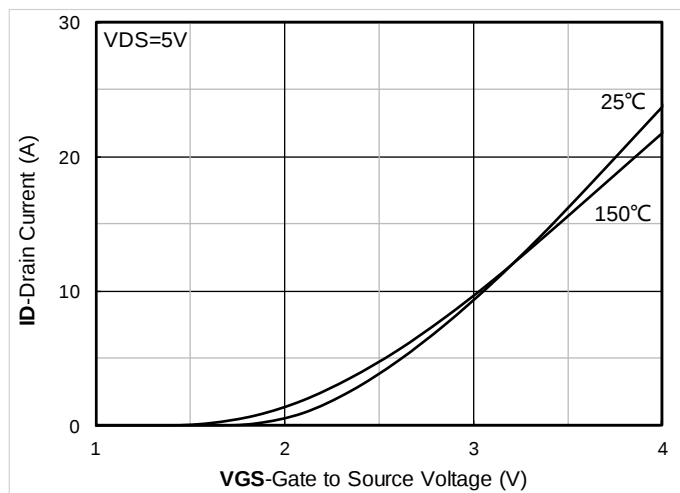


Figure 2. Transfer Characteristics

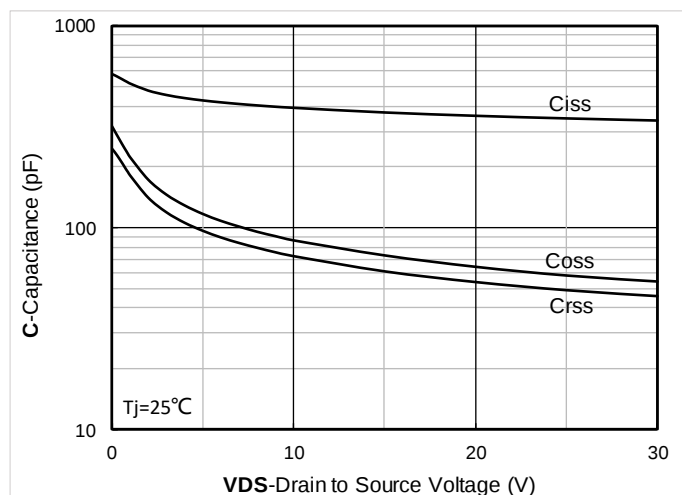


Figure 3. Capacitance Characteristics

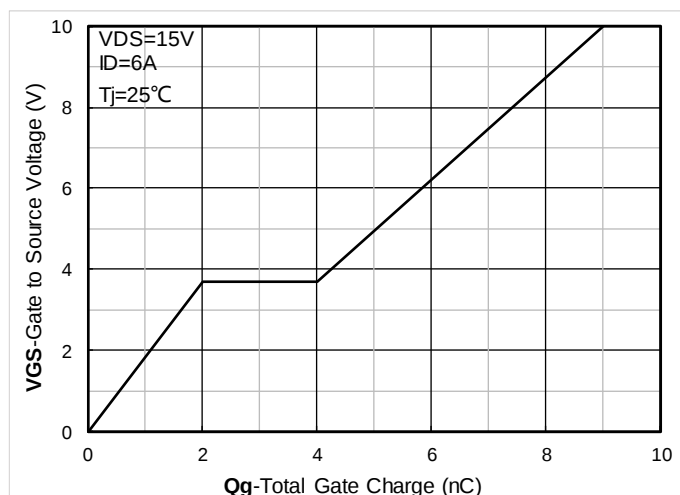


Figure 4. Gate Charge

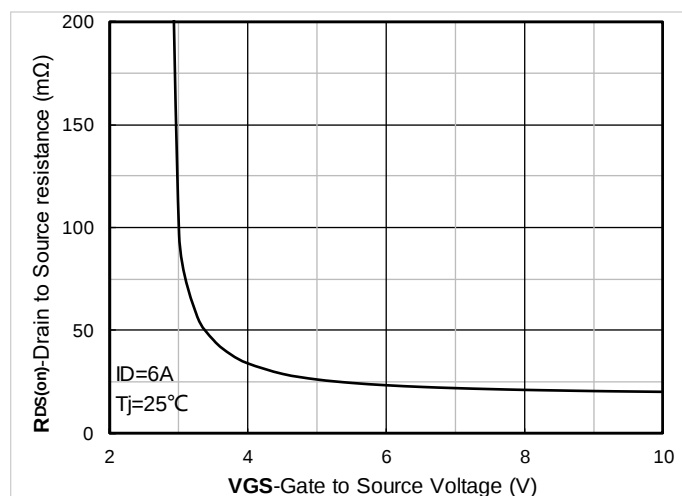


Figure 5. On-Resistance vs Gate to Source Voltage

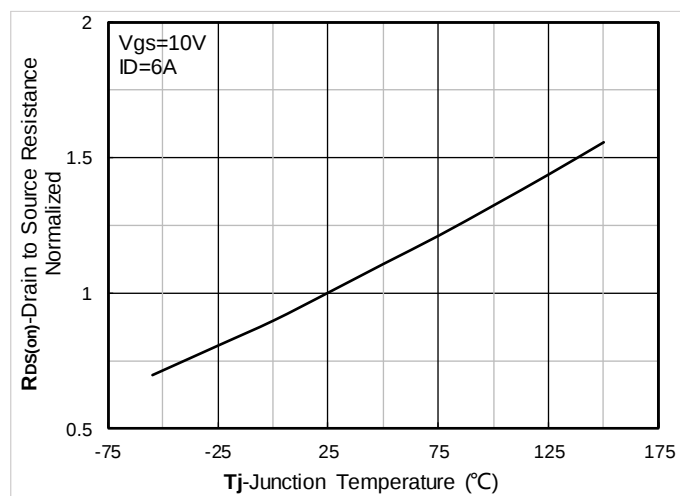


Figure 6. Normalized On-Resistance

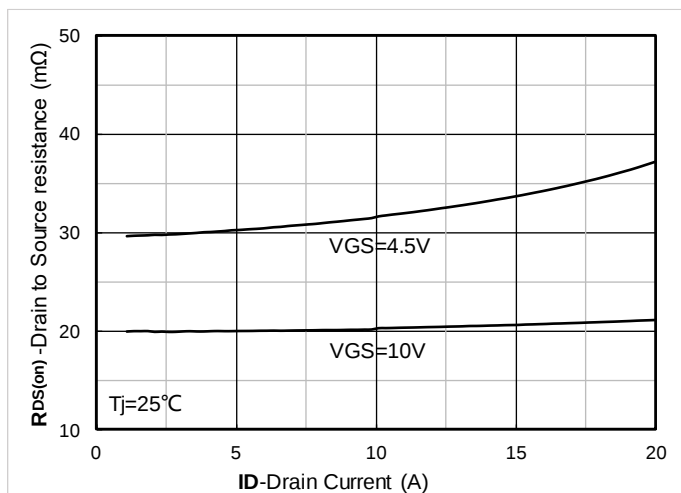


Figure 7. $R_{DS(on)}$ VS Drain Current

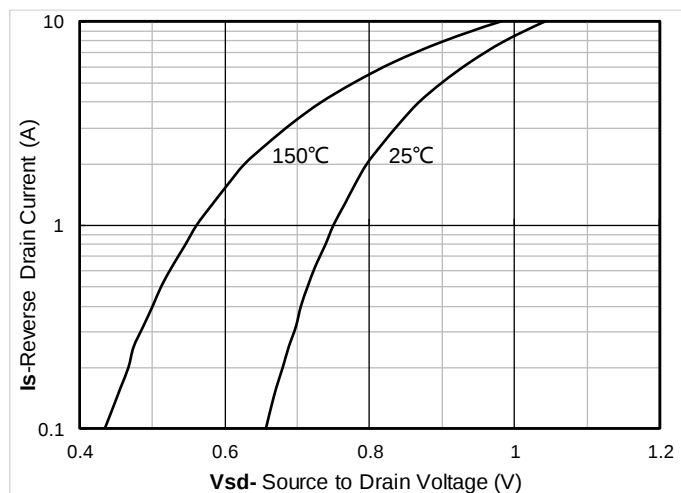


Figure 8. Forward characteristics of reverse diode

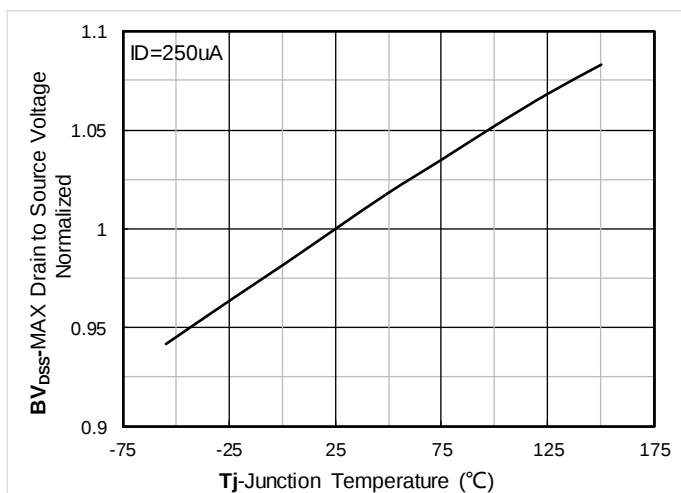


Figure 9. Normalized breakdown voltage

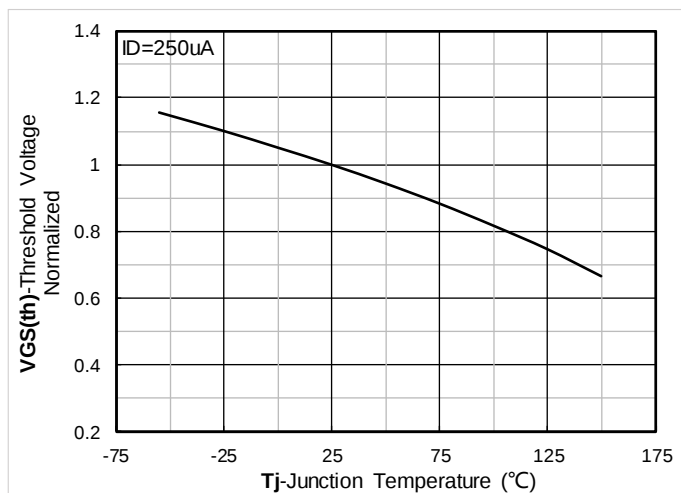


Figure 10. Normalized Threshold voltage

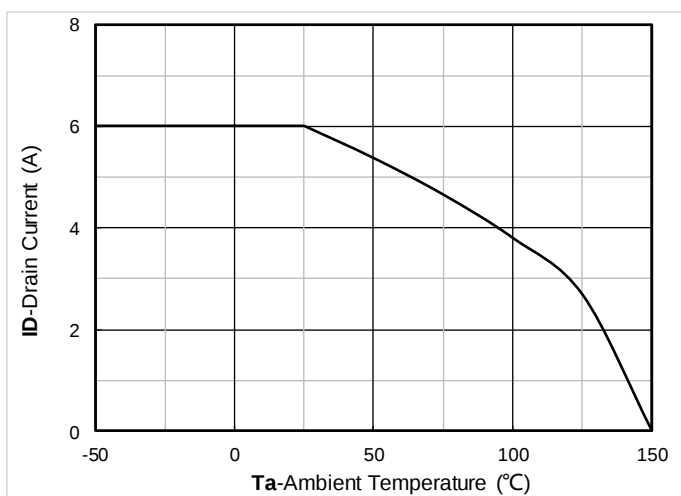


Figure 11. Current dissipation

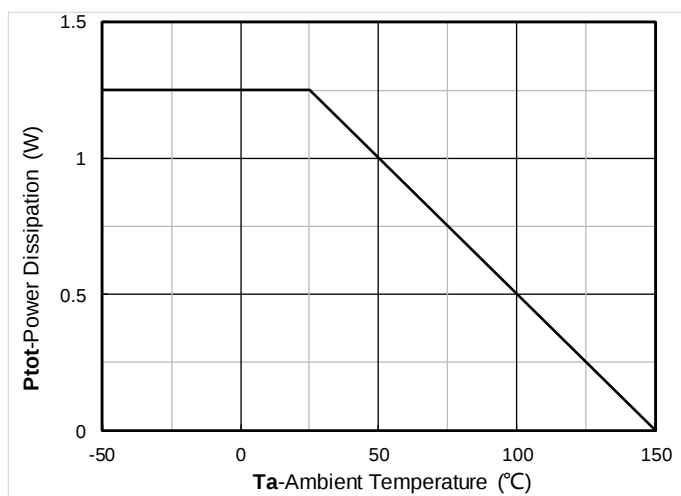


Figure 12. Power dissipation

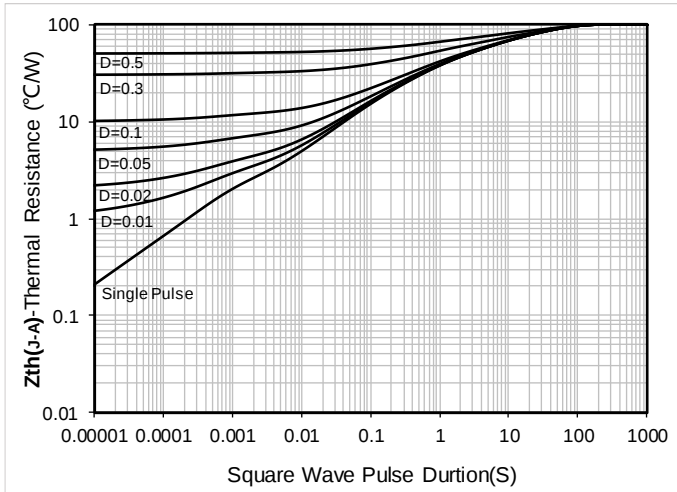


Figure 13. Maximum Transient Thermal Impedance

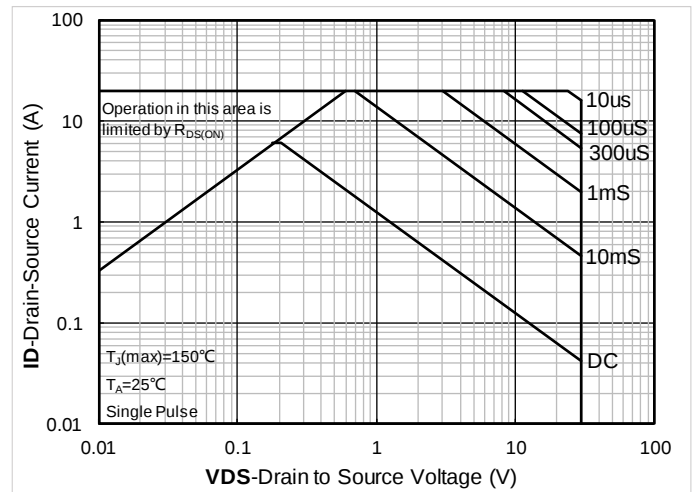


Figure 14. Safe Operation Area

PMOS Typical Electrical and Thermal Characteristics Diagrams

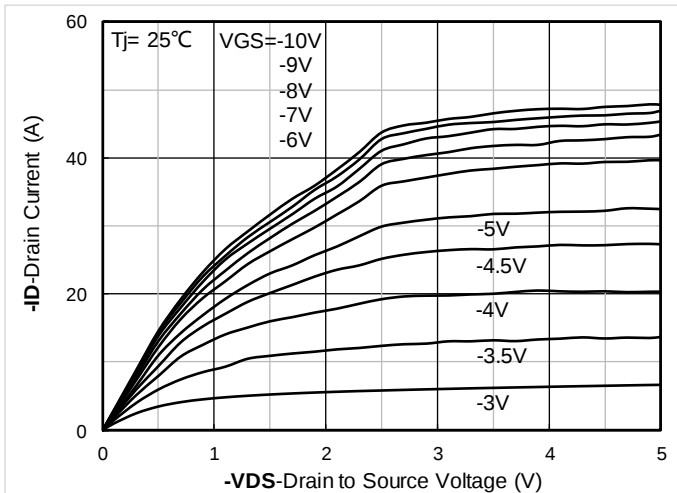


Figure 1. Output Characteristics

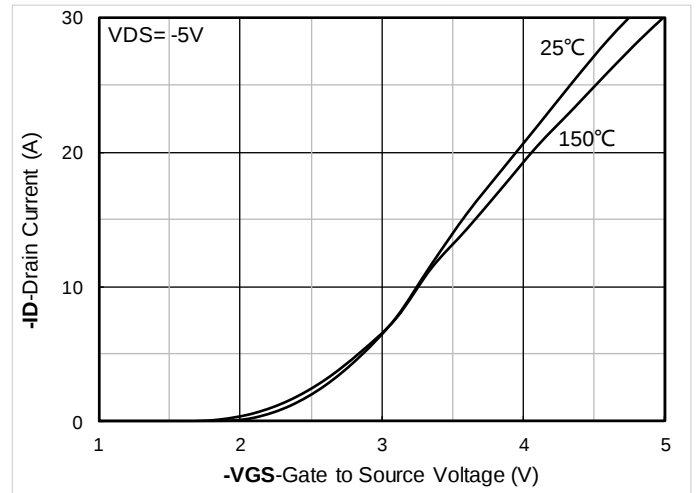


Figure 2. Transfer Characteristics

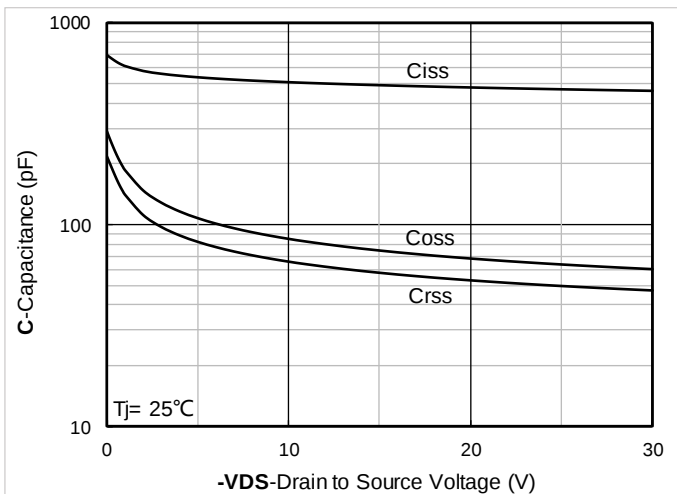


Figure 3. Capacitance Characteristics

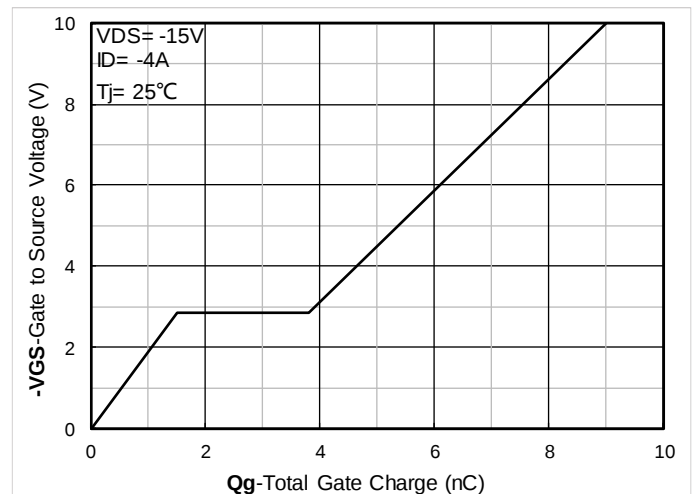


Figure 4. Gate Charge

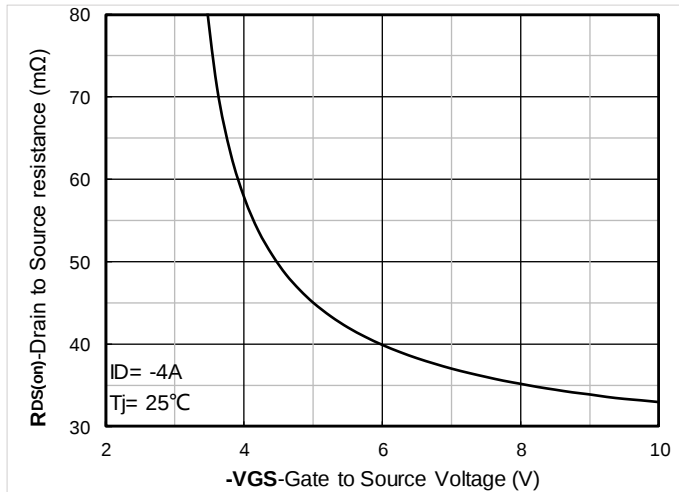


Figure 5. On-Resistance vs Gate to Source Voltage

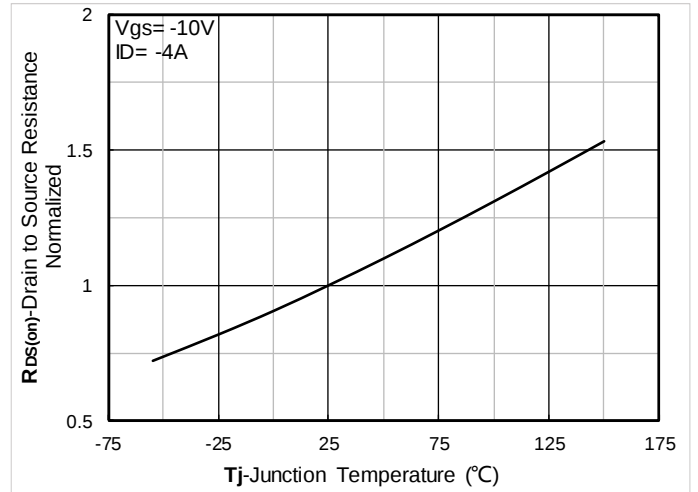


Figure 6. Normalized On-Resistance

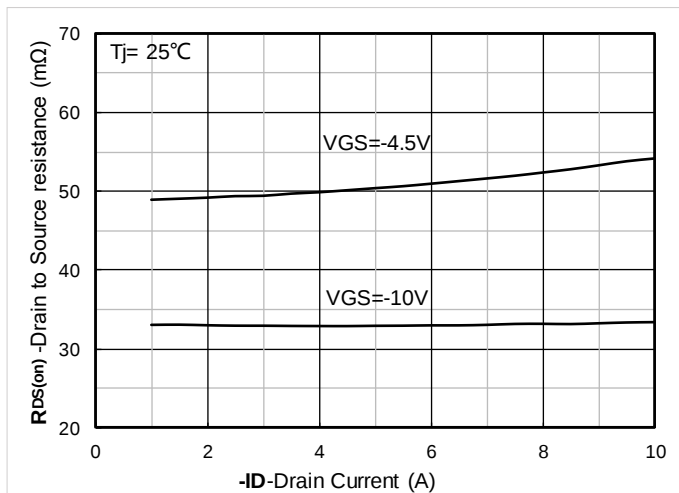


Figure 7. $R_{DS(on)}$ VS Drain Current

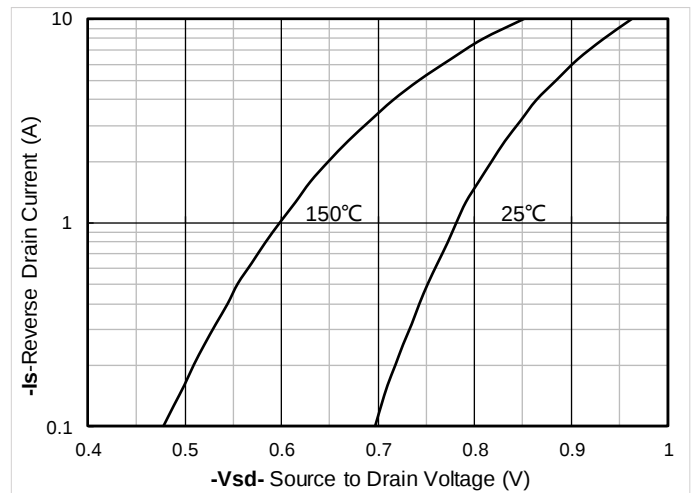


Figure 8. Forward characteristics of reverse diode

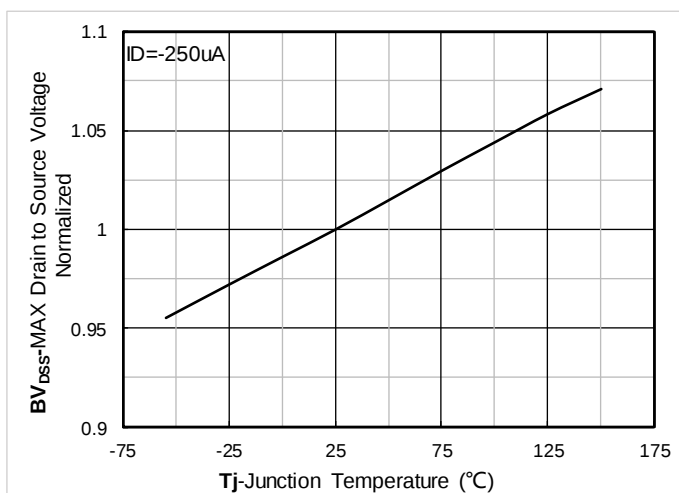


Figure 9. Normalized breakdown voltage

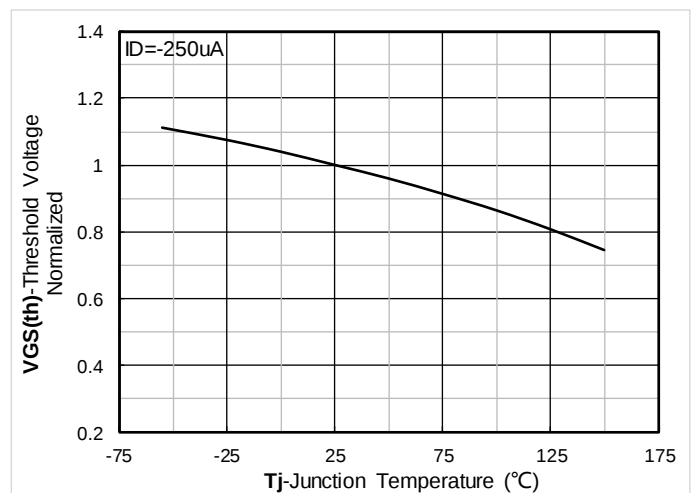


Figure 10. Normalized Threshold voltage

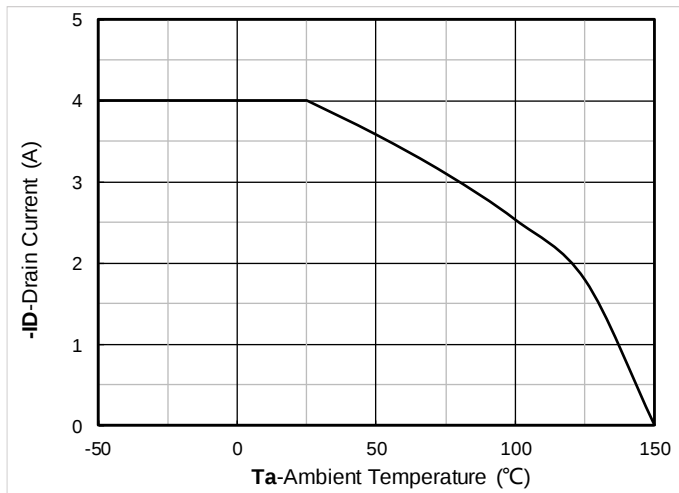


Figure 11. Current dissipation

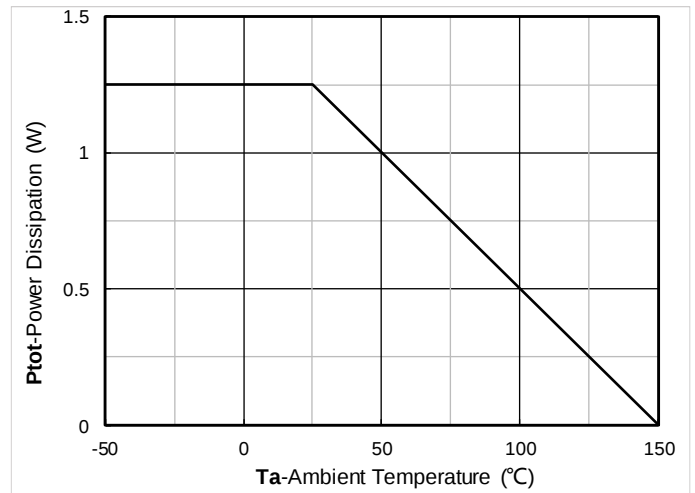


Figure 12. Power dissipation

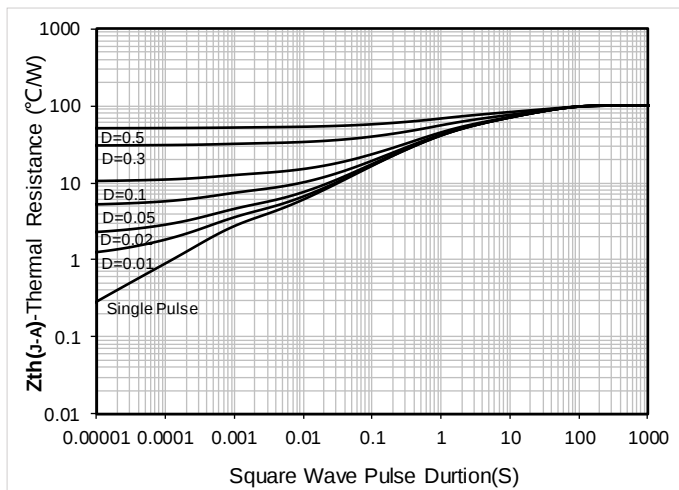


Figure 13. Maximum Transient Thermal Impedance

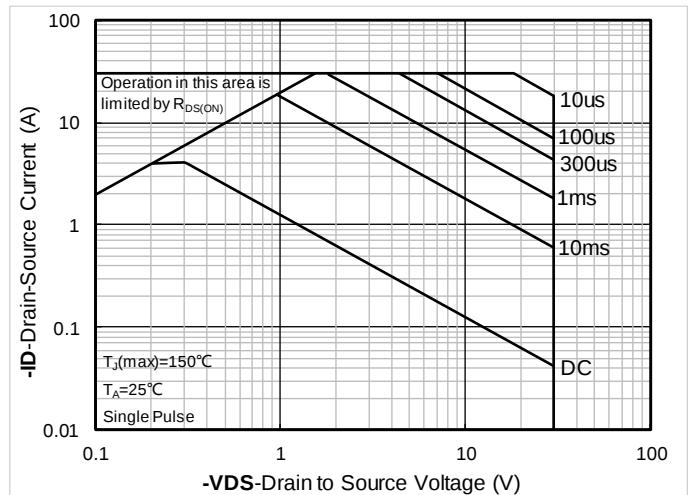
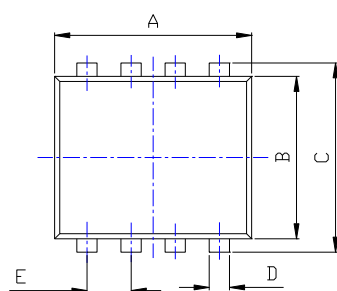
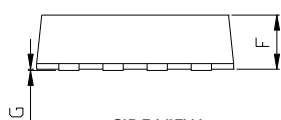


Figure 14. Safe Operation Area

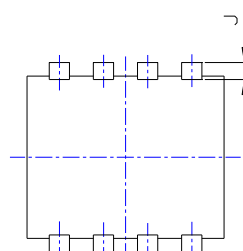
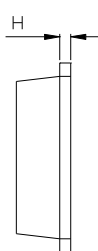
■ PDFN3030-8L Package information



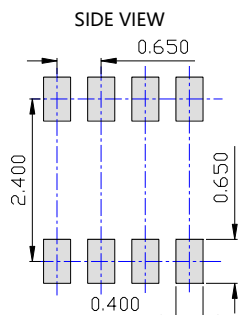
TOP VIEW



SIDE VIEW



BOTTOM VIEW



SUGGESTED SOLDER PAD LAYOUT

UNIT: mm

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.108	0.120	2.750	3.050
B	0.089	0.100	2.250	2.550
C	0.104	0.116	2.650	2.950
D	0.008	0.016	0.200	0.400
E	0.026 TYP		0.650 TYP	
F	0.028	0.035	0.700	0.900
G	0.000	0.004	0.000	0.100
H	0.004	0.012	0.100	0.300
J	0.007	0.015	0.190	0.390

NOTE:

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

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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). Russiansunco or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

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