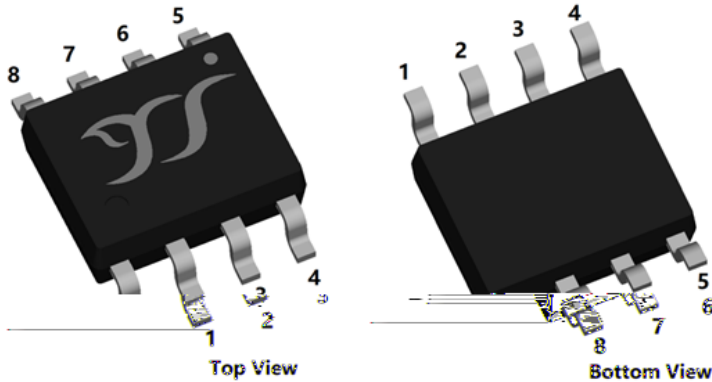


N-Channel and P-Channel Complementary MOSFET



Product Summary

NMOS

- V_{DS} 100V
- I_D 5A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<27m\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) $<30m\Omega$

PMOS

- V_{DS} -100V
- I_D -3A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) $<110m\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) $<120m\Omega$

General Description

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- Moisture Sensitivity Level 3
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

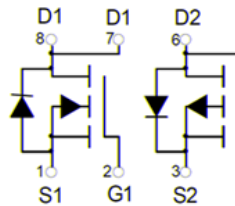
Applications

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

D2
5

SOP-8

4
G2



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

Parameter		Symbol	NMOS	PMOS	Unit
Drain-source Voltage		V_{DS}	100	-100	V
Gate-source Voltage		V_{GS}	± 20	± 20	V
Drain Current	$T_A=25$	I_D	5	-3	A
	$T_A=100$		3.2	-1.9	
Pulsed Drain Current ^A		I_{DM}	30	25	A
Total Power Dissipation ^B	$T_A=25$	P_D	1.5	1.3	W
	$T_A=100$		0.6	0.5	
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 ^C	Steady-State	$R_{\theta JA}$	70	85	75	90	$^\circ C/W$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJS03NP10A	F2	Q03NP10A	4000	8000	64000	13" reel



YJS03NP10A

■ NMOS Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
		$V_{DS}=100V, V_{GS}=0V, T_J=150^\circ\text{C}$	-	-	100	
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$	-	21	27	m Ω
		$V_{GS}=4.5V, I_D=2A$	-	24	30	
Diode Forward Voltage	V_{SD}	$I_S=5A, V_{GS}=0V$	-	0.8	1.2	V
Gate resistance	R_G	$f=1\text{MHz}$, Open drain	-	1.1	-	Ω
Maximum Body-Diode Continuous Current	I_S		-	-	5	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	-	1170	-	μF
Output Capacitance	C_{oss}		-	370	-	
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=50V, I_D=5A$	-	16	-	nC
Gate-Source Charge	Q_{gs}		-	5.6	-	
Gate-Drain Charge	Q_{gd}		-	2.4	-	
Reverse Recovery Charge	Q_{rr}	$I_F=5A, di/dt=100A/\mu s$	-	42	-	nC
Reverse Recovery Time	t_{rr}		-	39.8	-	ns
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=50V, I_D=5A$ $R_{GEN}=2.2\Omega$	-	39.2	-	ns
Turn-on Rise Time	t_r		-	11	-	
Turn-off Delay Time	$t_{D(off)}$		-	53.2	-	
Turn-off fall Time	t_f		-	15.8	-	



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■ PMOS Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100V, V_{GS}=0V$	-	-	-1	μA
		$V_{DS}=-100V, V_{GS}=0V, T_J=150^\circ\text{C}$	-	-	-100	



YJS03NP10A

NMOS Typical Electrical and Thermal Characteristics Diagrams

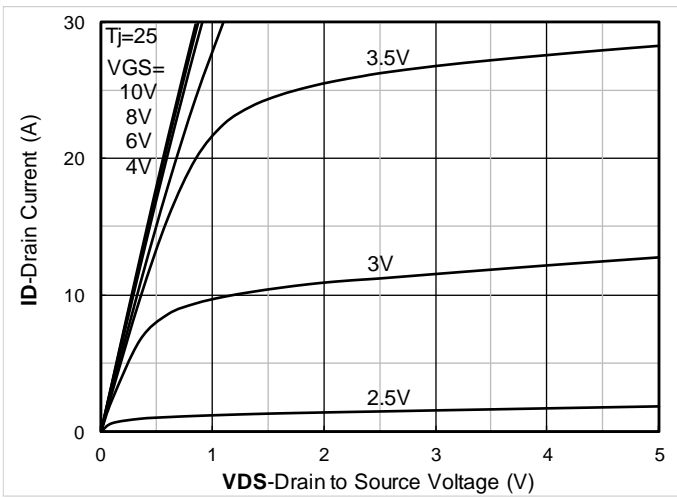


Figure 1. Output Characteristics

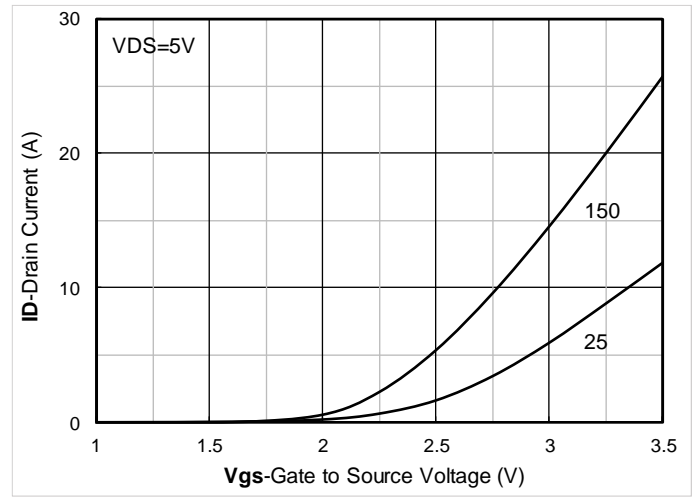


Figure 2. Transfer Characteristics

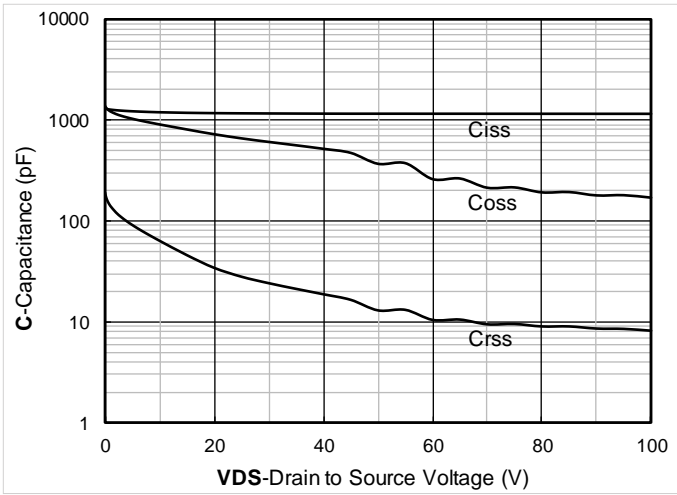


Figure 3. Capacitance Characteristics

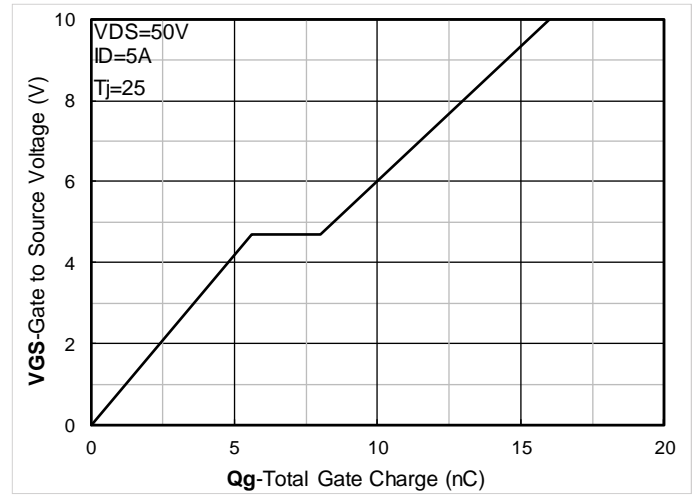


Figure 4. Gate Charge

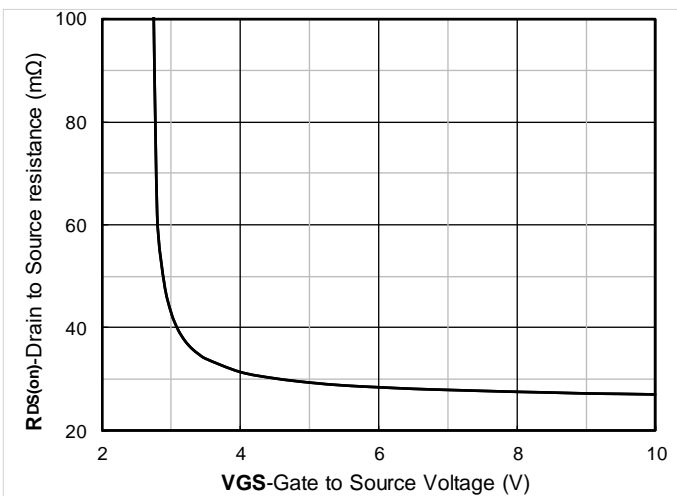


Figure 5. On-Resistance vs Gate to Source Voltage

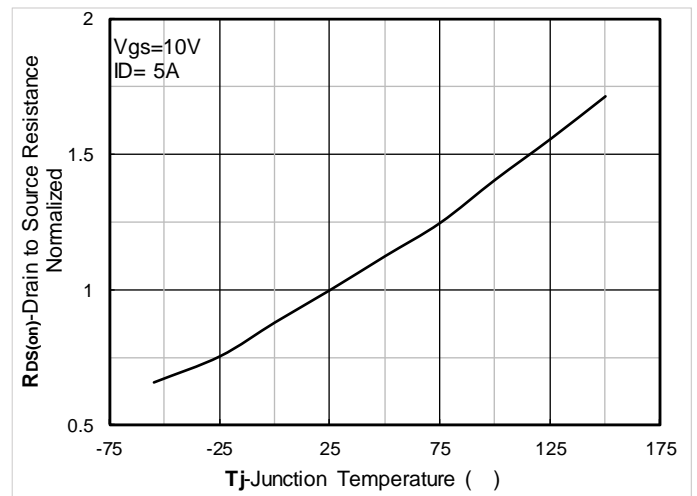


Figure 6. Normalized On-Resistance vs Junction Temperature



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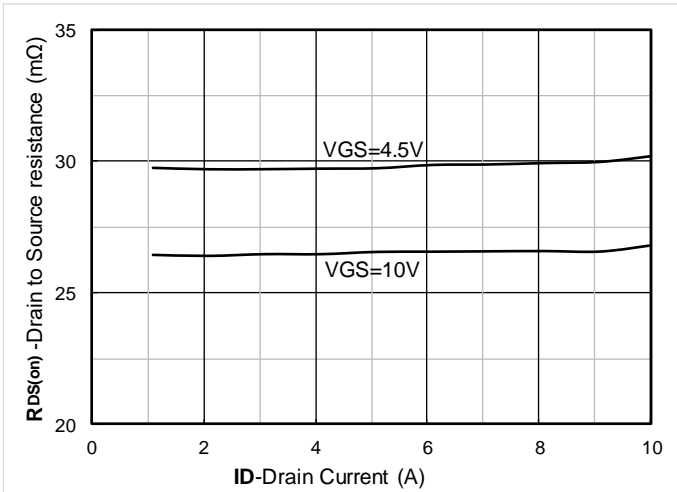


Figure 7. RDS(on) VS Drain Current

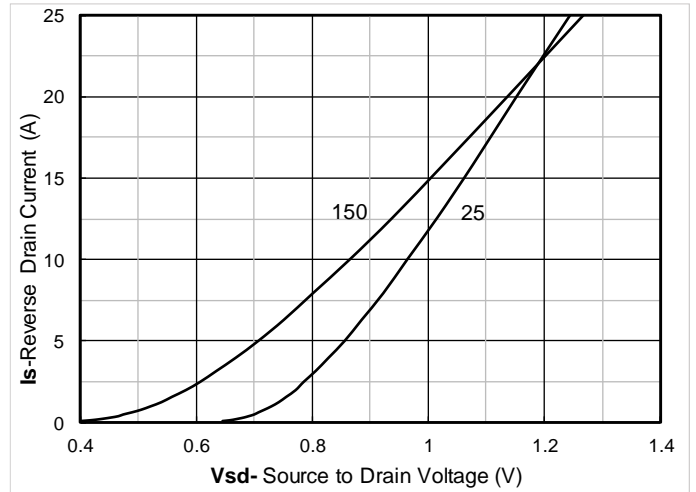


Figure 8. Forward characteristics of reverse diode

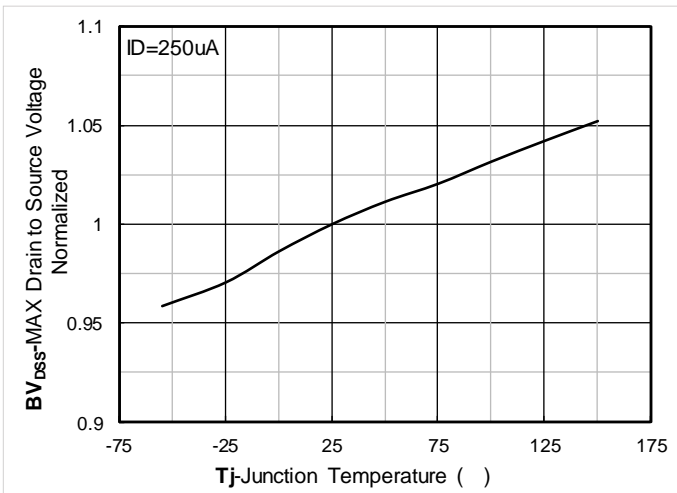


Figure 9. Normalized breakdown voltage

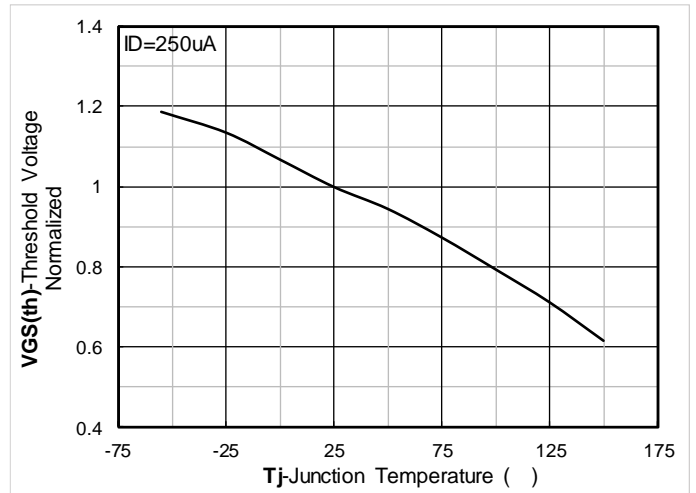


Figure 10. Normalized Threshold voltage

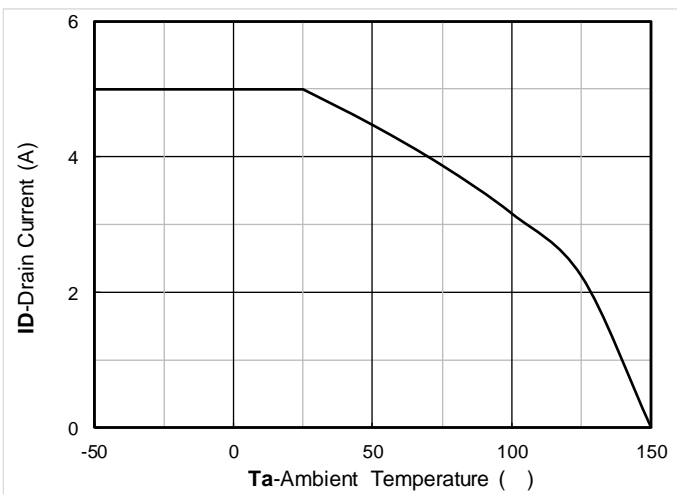


Figure 11. Current dissipation

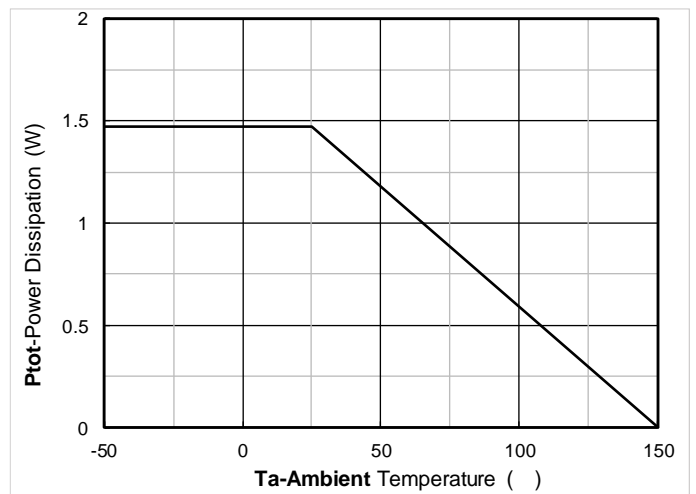


Figure 12. Power dissipation



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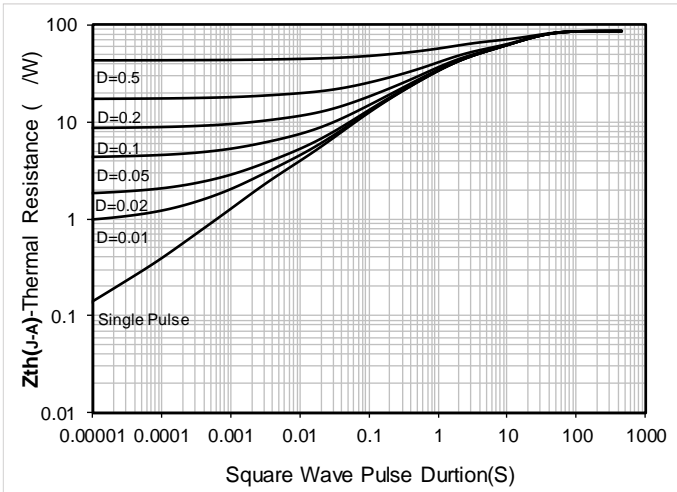


Figure 13. Maximum Transient Thermal Impedance

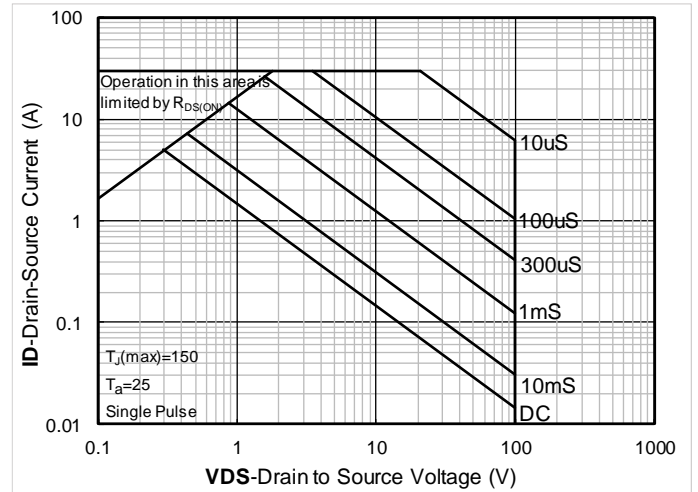


Figure 14. Safe Operation Area

PMOS Typical Electrical and Thermal Characteristics Diagrams

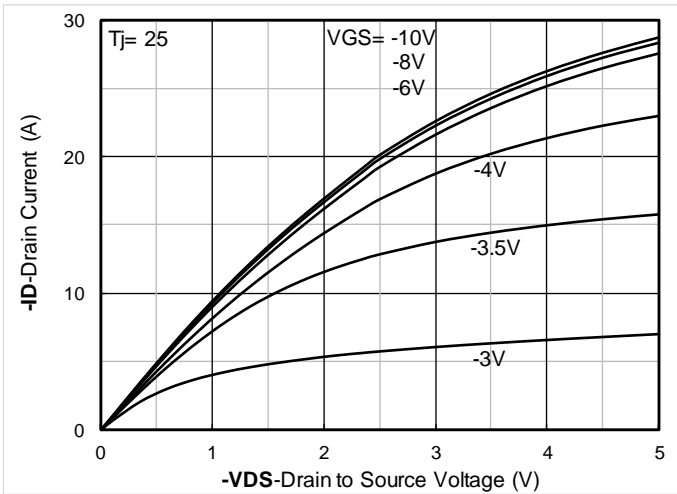


Figure 1. Output Characteristics

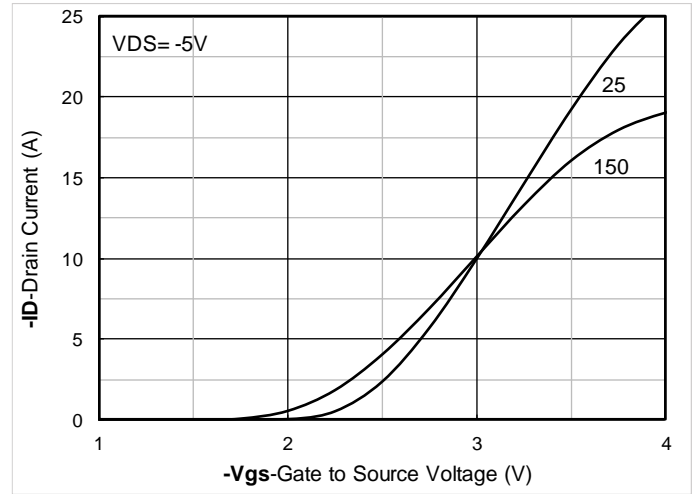


Figure 2. Transfer Characteristics

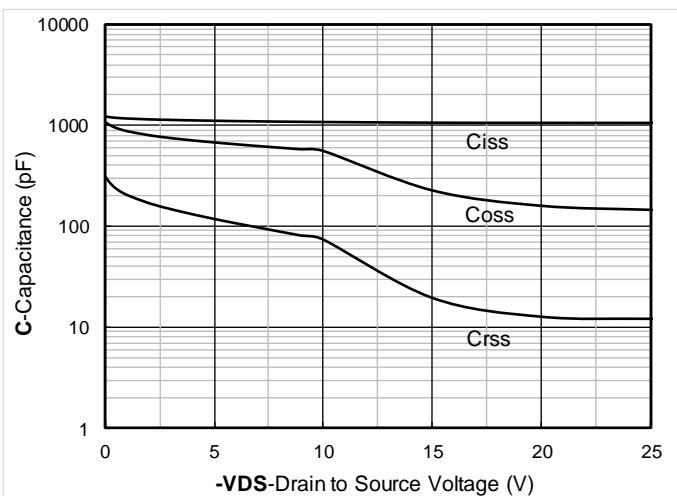


Figure 3. Capacitance Characteristics

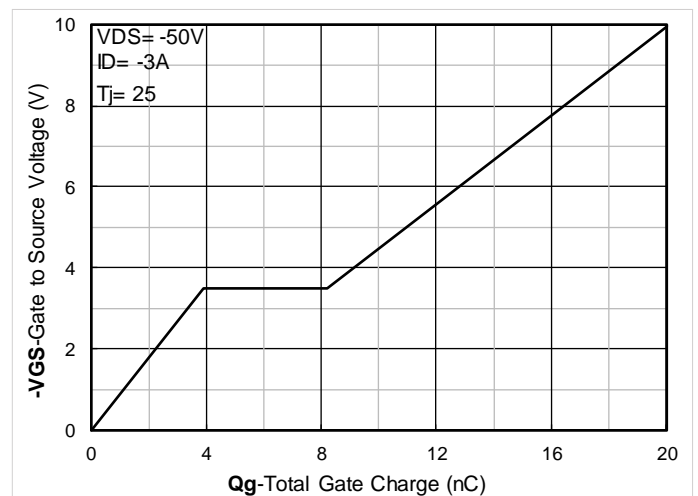


Figure 4. Gate Charge



YJS03NP10A

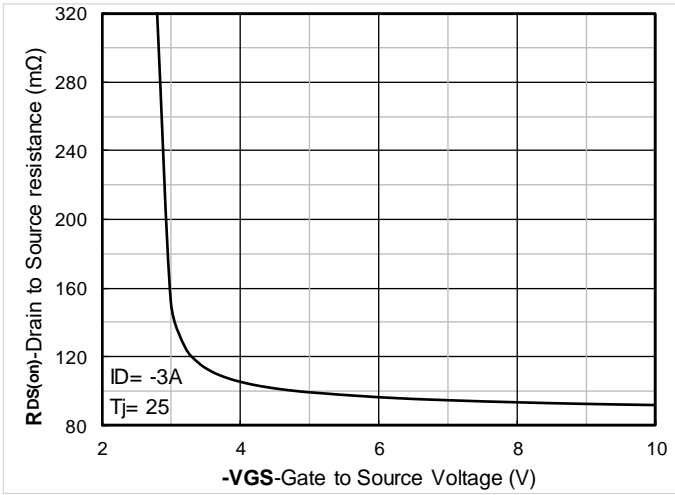


Figure 5. On-Resistance vs Gate to Source Voltage

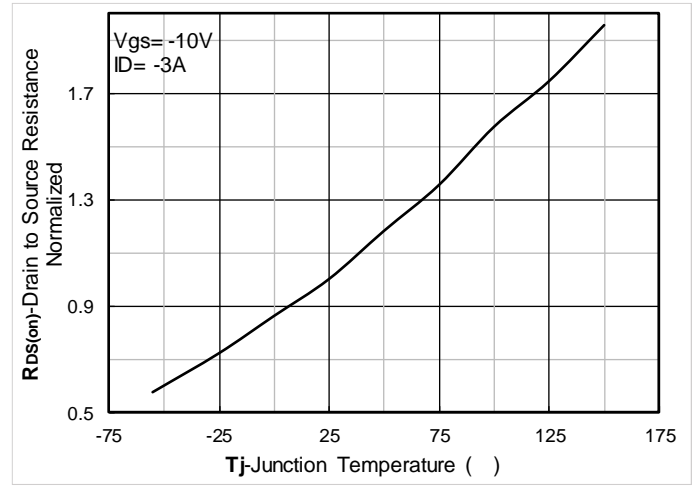


Figure 6. Normalized On-Resistance

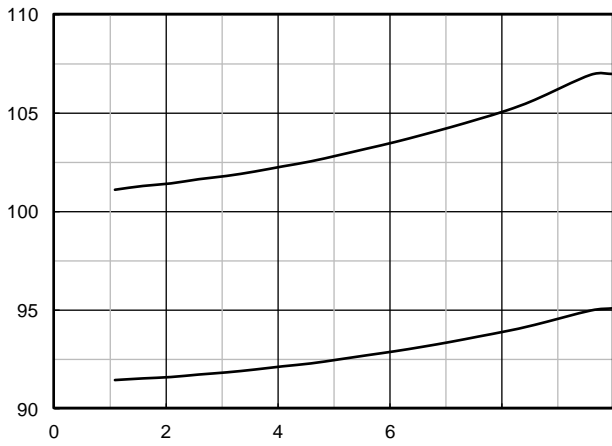


Figure 7. RDS(on) VS Drain Current

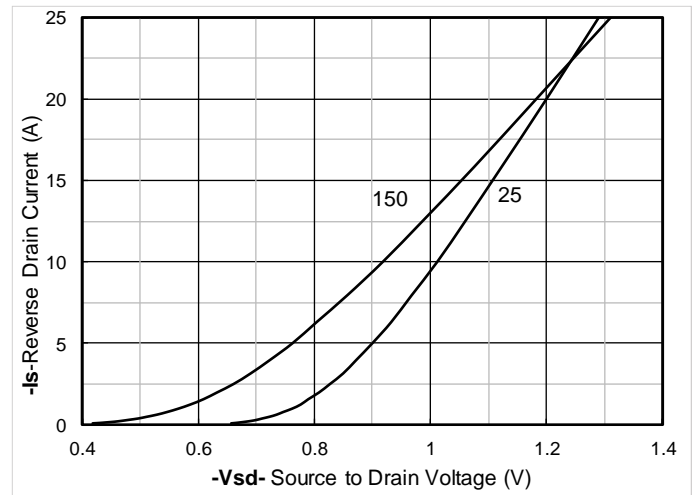


Figure 8. Forward characteristics of reverse diode

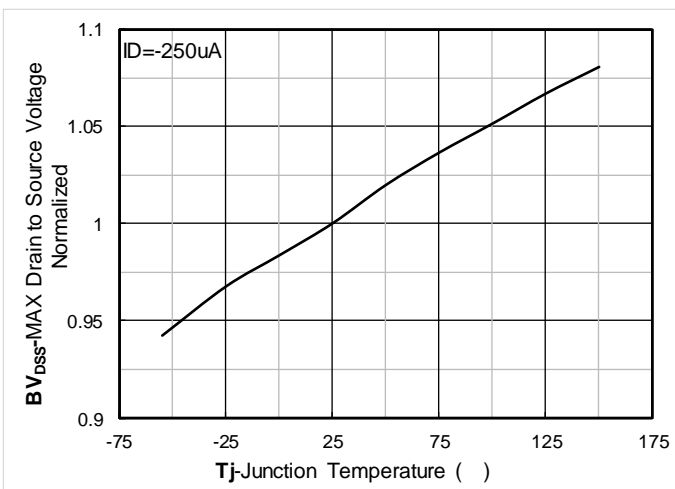


Figure 9. Normalized breakdown voltage

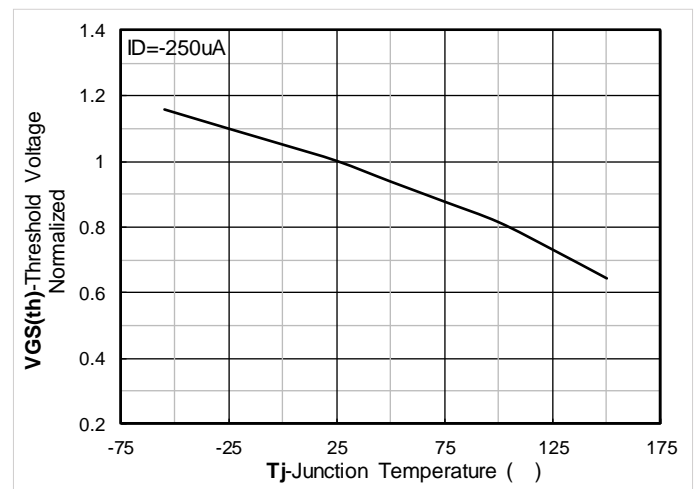


Figure 10. Normalized Threshold voltage



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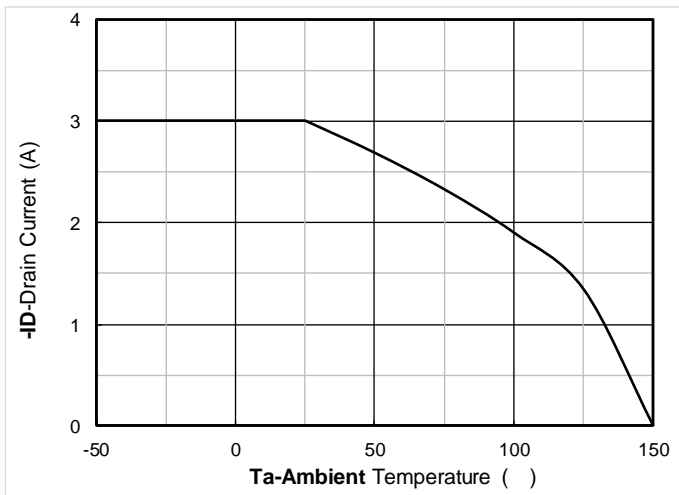


Figure 11. Current dissipation

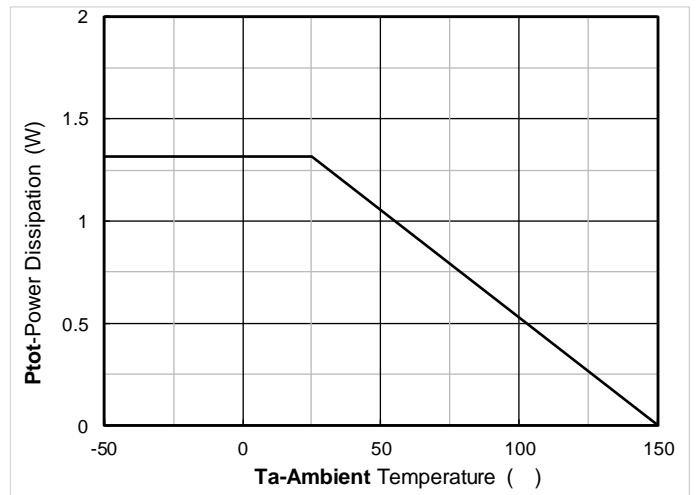


Figure 12. Power dissipation

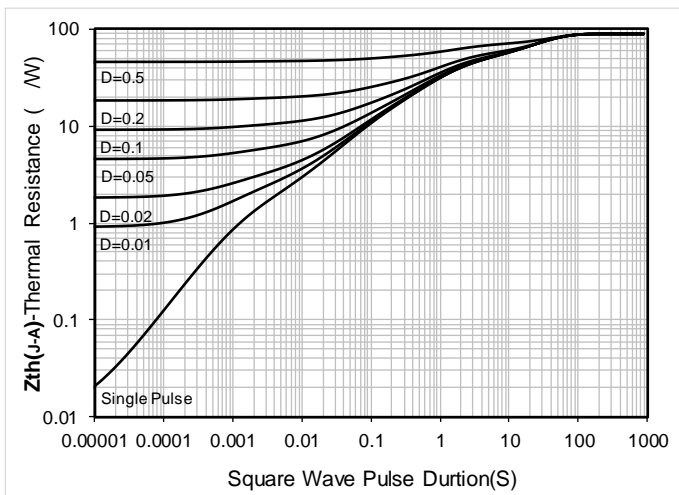


Figure 13. Maximum Transient Thermal Impedance

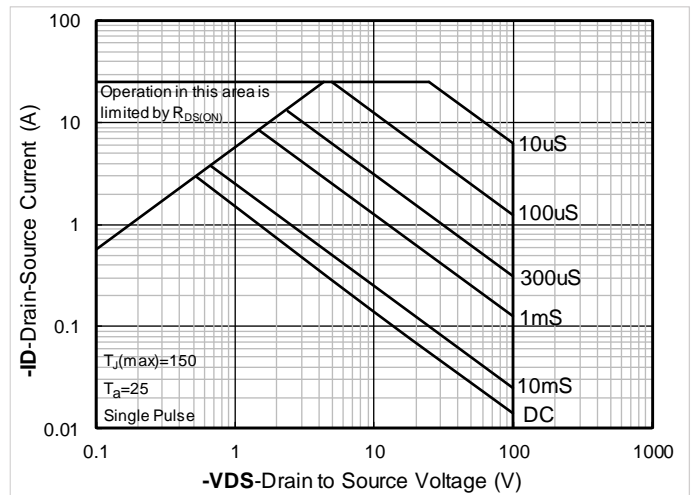
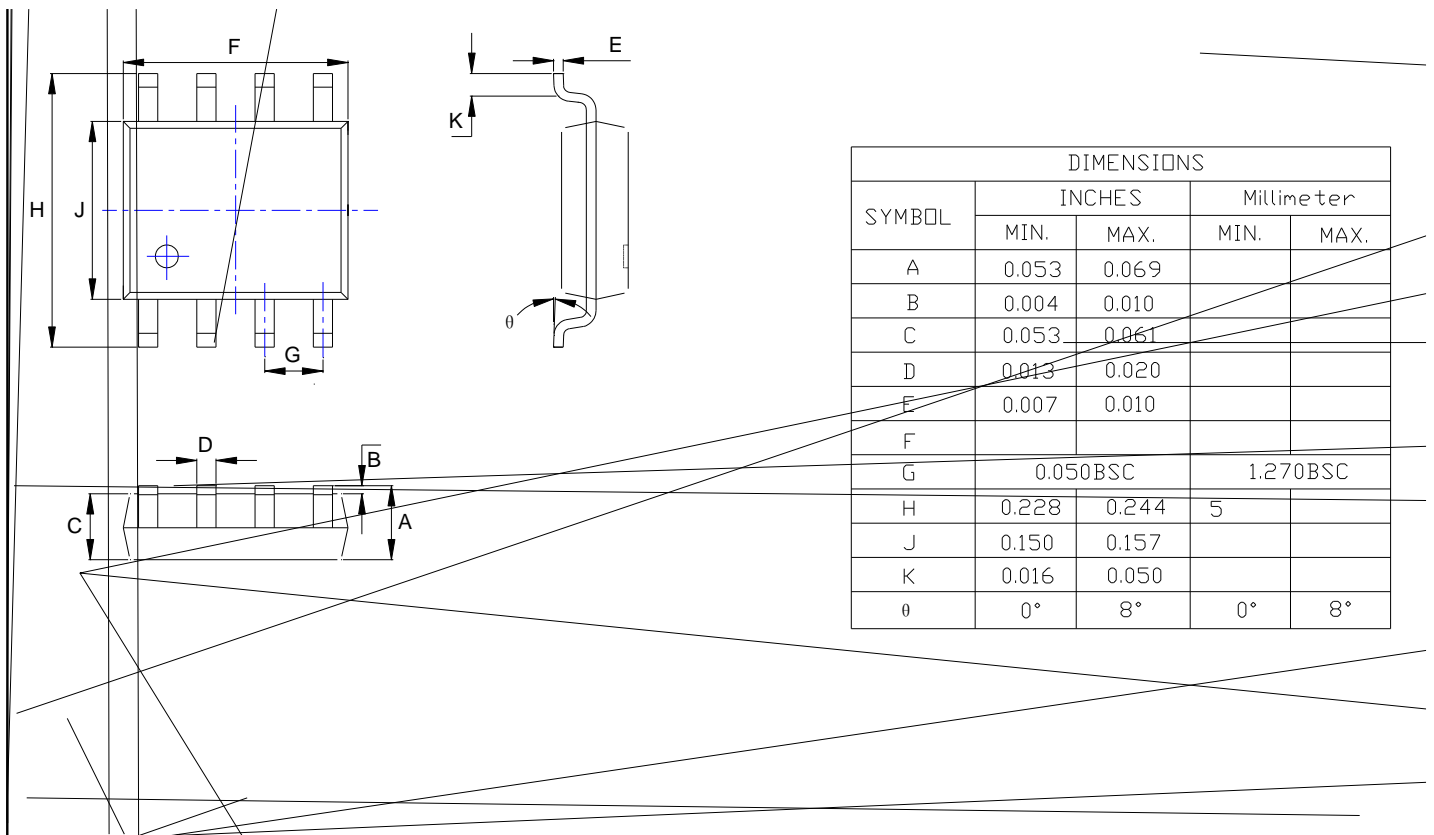


Figure 14. Safe Operation Area



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■ SOP-8 Package information





YJS03NP10A

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