

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	27mΩ@10V	5A
	30mΩ@4.5V	

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-100V	110mΩ@-10V	-3A
	120mΩ@-4.5V	

Feature

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- Epoxy Meets UL 94 V-0 Flammability Rating
- Suffix "-Q1" for AEC-Q101

Application

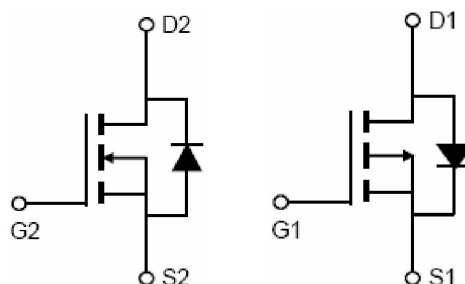
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

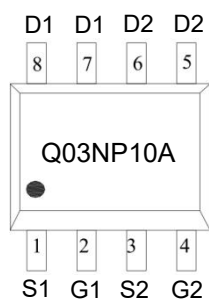


SOP-8

Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	N-Channel	p-Channel	Unit
Drain-Source Voltage	V_{DS}	100	-100	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current	I_D	5	-3	A
Pulsed Drain Current	I_{DM}	30	-25	A
Power Dissipation	P_D	1.5	1.3	W
Thermal Resistance, Junction-to-Ambient ¹⁾	$R_{\theta JA}$	85	90	°C/W
Junction Temperature	T_J	150	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	-55 ~ +150	°C

N-CH Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V,V _{GS} = 0V			1	μA
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	1.8	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =5A		21	27	mΩ
		V _{GS} =4.5V, I _D =2A		24	30	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V,f =1MHz		1170		pF
Output Capacitance	C _{oss}			370		
Reverse Transfer Capacitance	C _{rss}			15		
Total Gate Charge	Q _g	V _{DS} =50V,V _{GS} =10V,I _D =5A		16		nC
Gate-Source Charge	Q _{gs}			5.6		
Gate-Drain Charge	Q _{gd}			2.4		
Turn-on delay time	t _{d(on)}	V _{DD} =50V,V _{GS} =10V I _D =5A,R _{GEN} =2.2Ω		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		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				5	A
Diode Forward voltage	V _{DS}	V _{GS} =0V, I _S =5A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =5A di/dt = 100A/μs ¹⁾		39.8		nS
Reverse Recovery Charge	Q _{rr}			42		nC

P-CH Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -100V, V _{GS} = 0V			-1	μA
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	-1.7	-2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} = -10V, I _D = -3A		85	110	mΩ
		V _{GS} = -4.5V, I _D = -2A		95	120	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} = -50V, V _{GS} = 0V, f = 1MHz		1050		pF
Output Capacitance	C _{oss}			110		
Reverse Transfer Capacitance	C _{rss}			10		
Total Gate Charge	Q _g	V _{DS} = -50V, V _{GS} = -10V, I _D = -3A		20.1		nC
Gate-Source Charge	Q _{gs}			3.9		
Gate-Drain Charge	Q _{gd}			4.3		
Turn-on delay time	t _{d(on)}	V _{DD} = -50V, V _{GS} = -10V, I _D = -3A, R _{GEN} = 2.2Ω		10		nS
Turn-on rise time	t _r			30		
Turn-off delay time	t _{d(off)}			77		
Turn-off fall time	t _f			81		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-3	A
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = -3A			-1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = -3A di/dt = 100A/μs ¹⁾		70		nS
Reverse Recovery Charge	Q _{rr}			140		nC

Notes:

- 1) Surface Mounted on FR4 Board, t_s ≤ 10 sec.
- 2) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤ 2%.
- 3) Guaranteed by design, not subject to production testing.

N- Channel Typical Characteristics

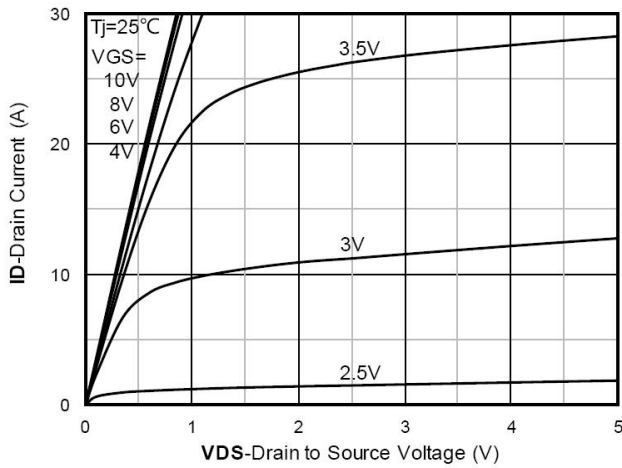


Figure 1. Output Characteristics

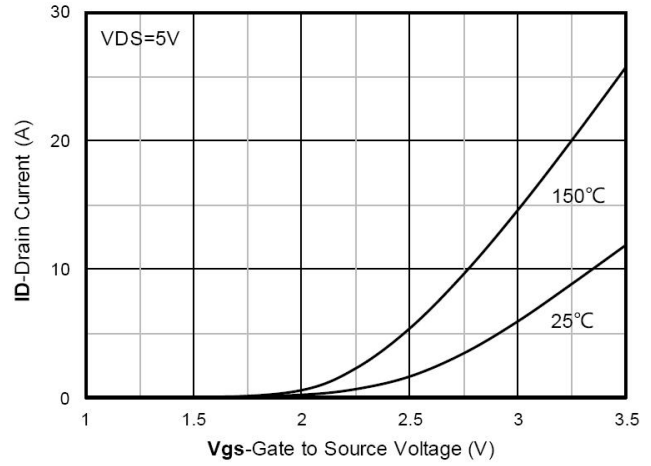


Figure 2. Transfer Characteristics

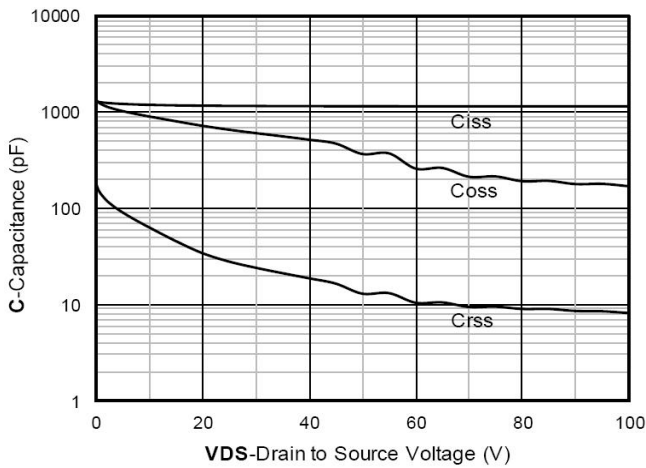


Figure 3. Capacitance Characteristics

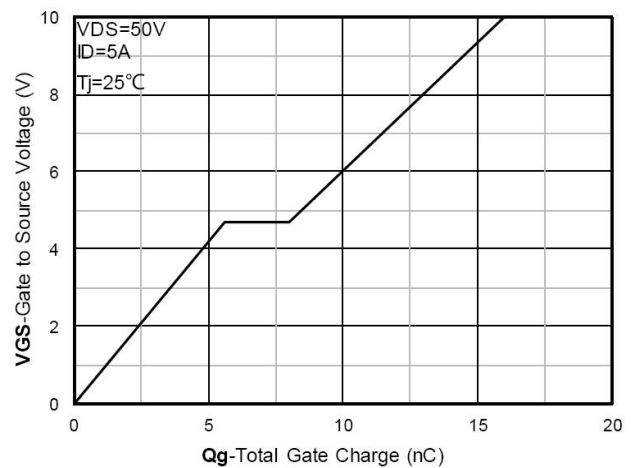


Figure 4. Gate Charge

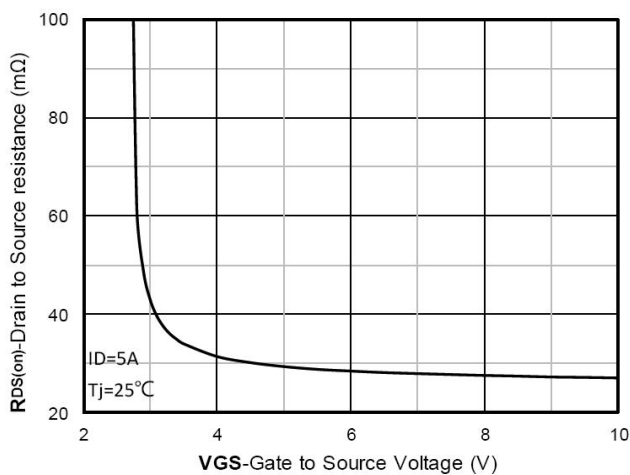


Figure 5. On-Resistance vs Gate to Source Voltage

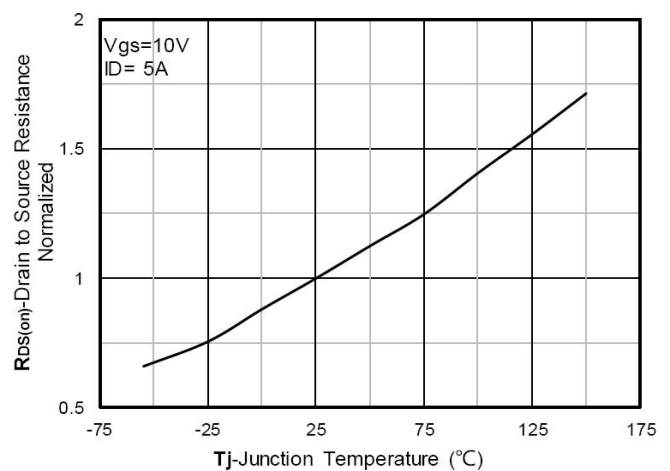


Figure 6. Normalized On-Resistance

N- Channel Typical Characteristics

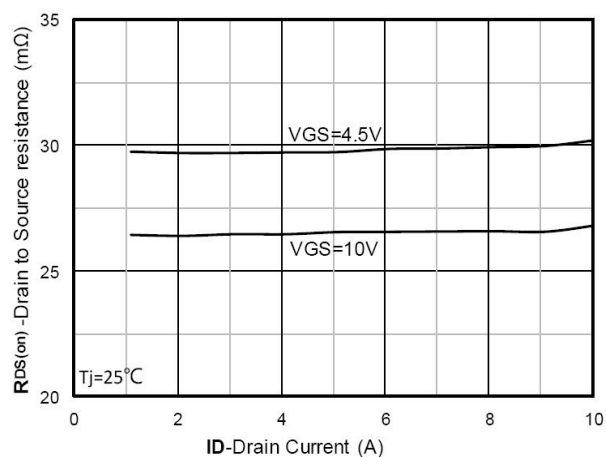


Figure 7. $R_{DS(on)}$ VS Drain Current

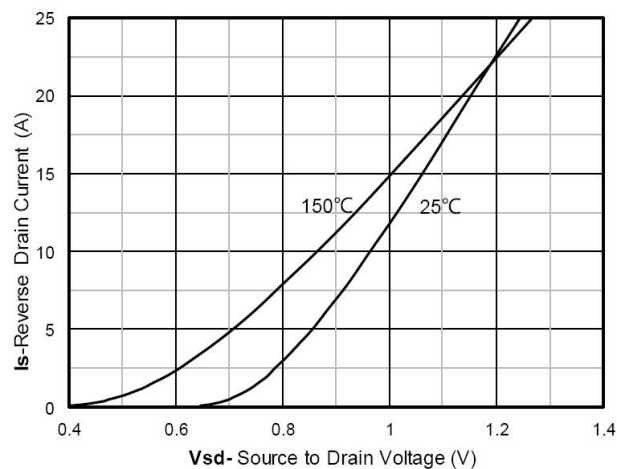


Figure 8. Forward characteristics of reverse diode

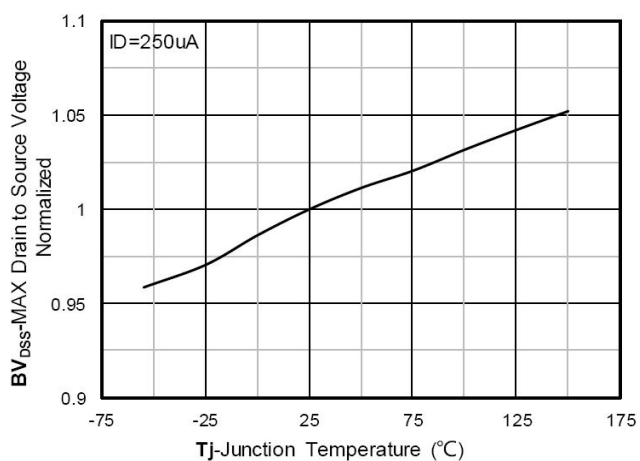


Figure 9. Normalized breakdown voltage

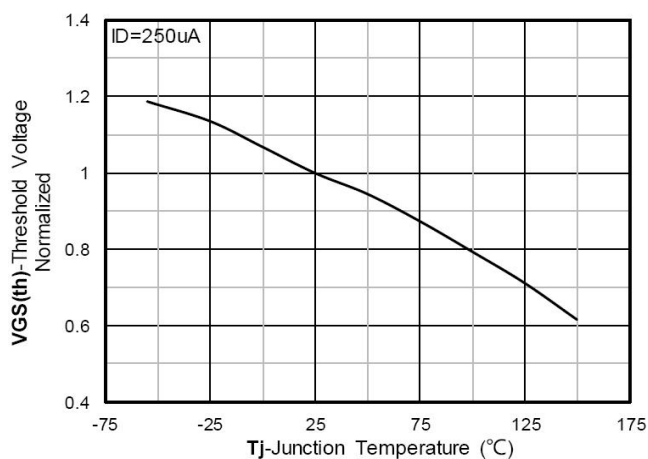


Figure 10. Normalized Threshold voltage

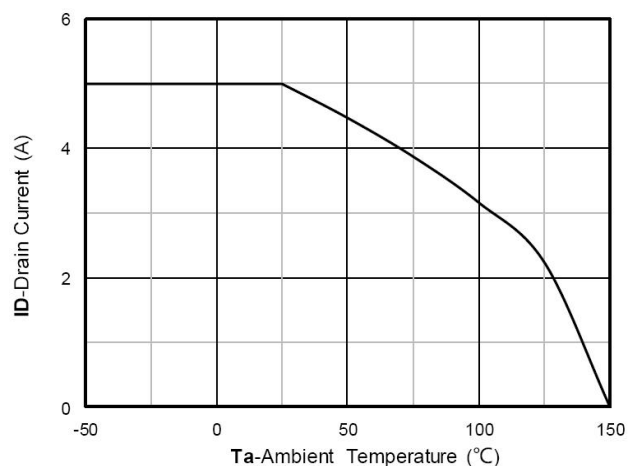


Figure 11. Current dissipation

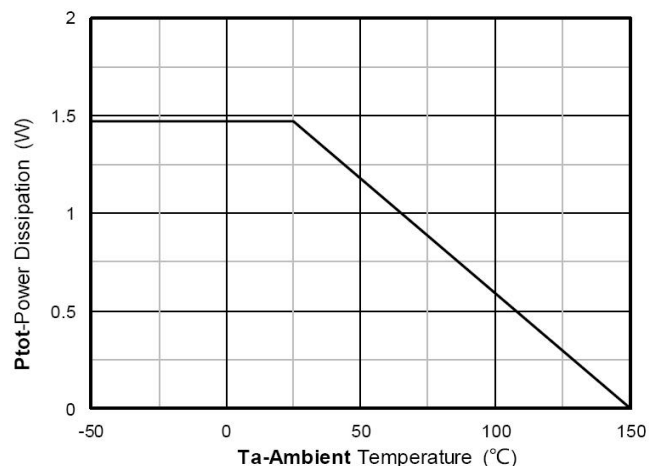


Figure 12. Power dissipation

N- Channel Typical Characteristics

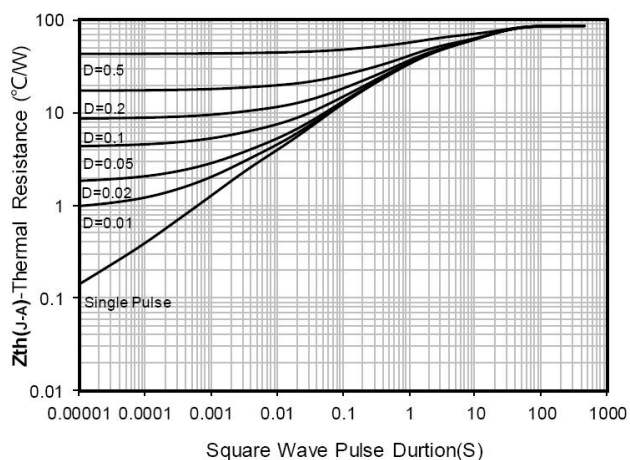


Figure 13. Maximum Transient Thermal Impedance

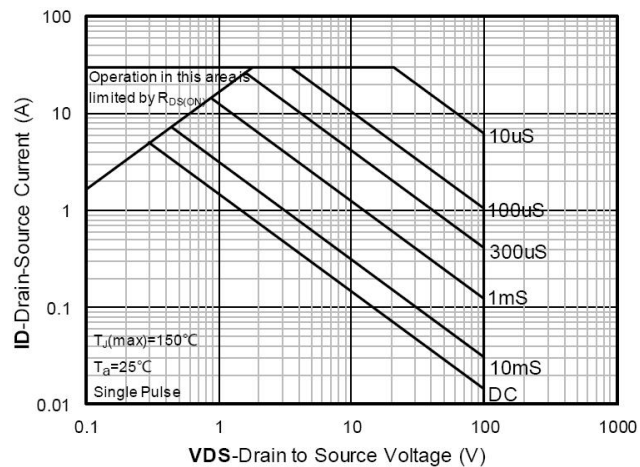


Figure 14. Safe Operation Area

P- Channel Typical Characteristics

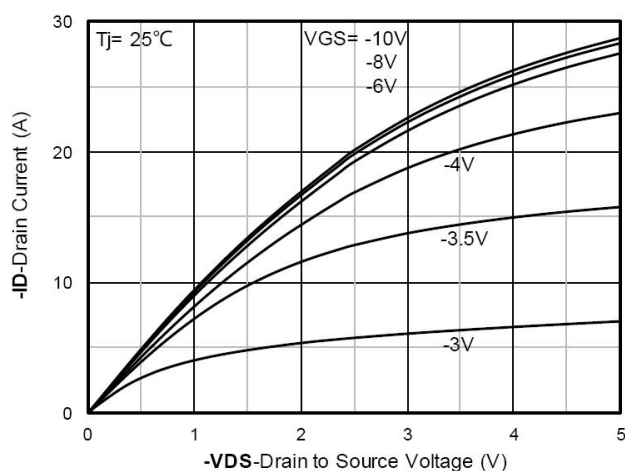


Figure 1. Output Characteristics

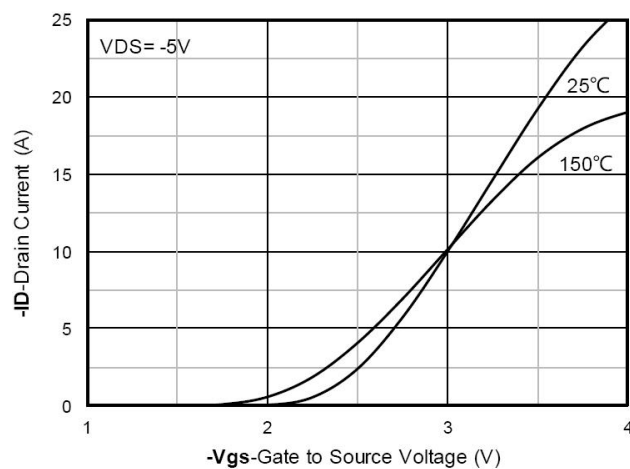


Figure 2. Transfer Characteristics

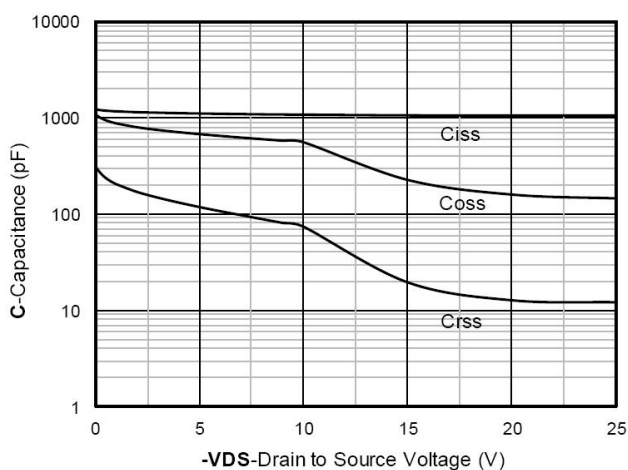


Figure 3. Capacitance Characteristics

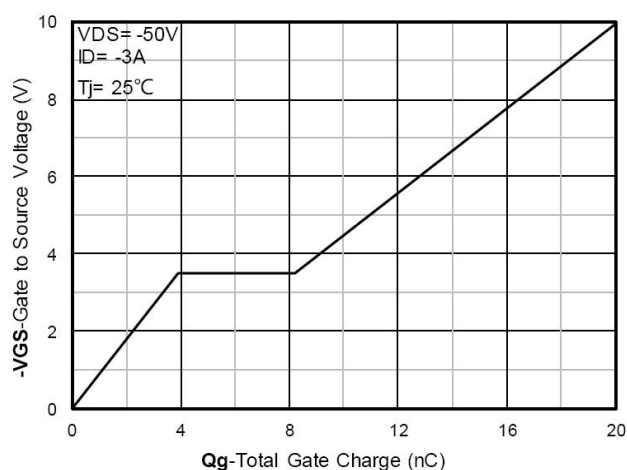


Figure 4. Gate Charge

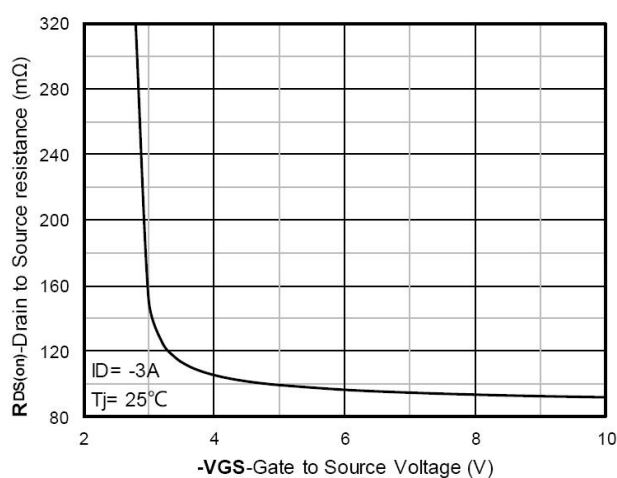


Figure 5. On-Resistance vs Gate to Source Voltage

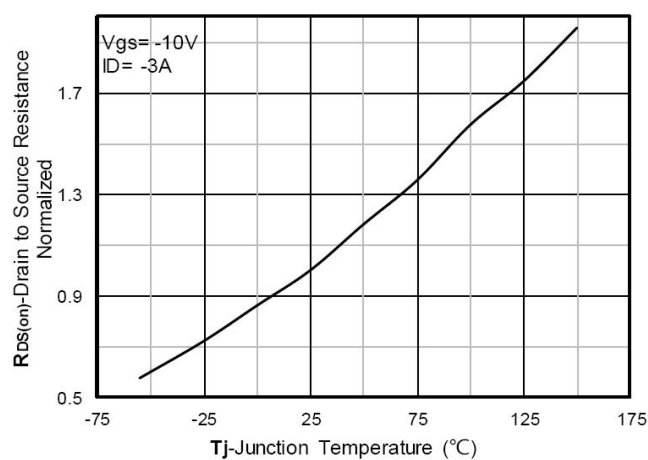


Figure 6. Normalized On-Resistance

P- Channel Typical Characteristics

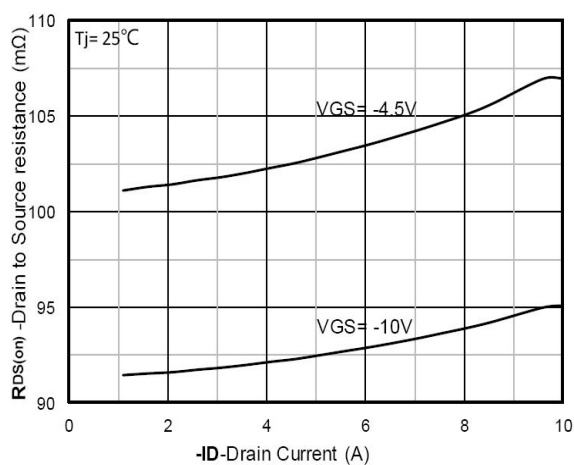


Figure 7. RDS(on) VS Drain Current

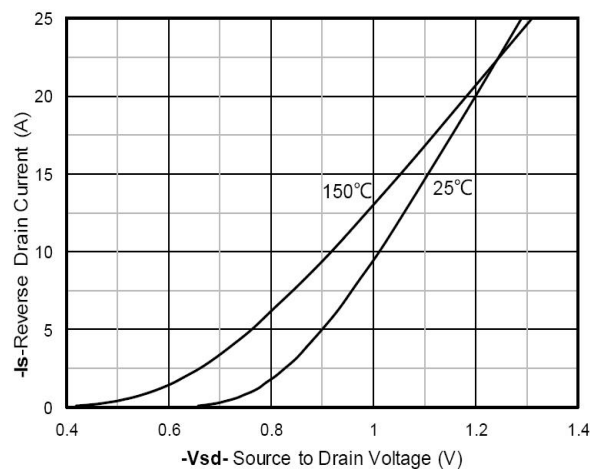


Figure 8. Forward characteristics of reverse diode

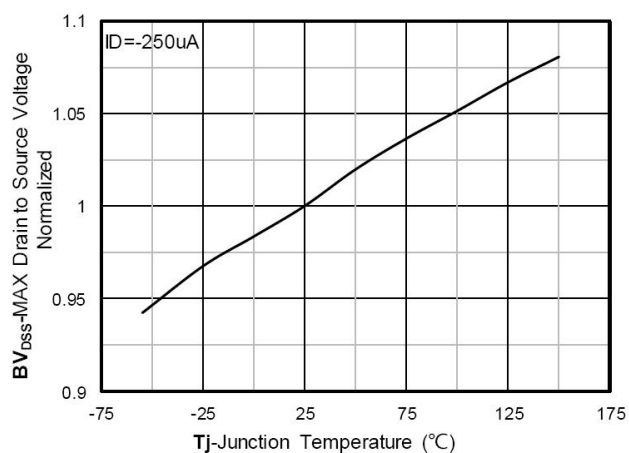


Figure 9. Normalized breakdown voltage

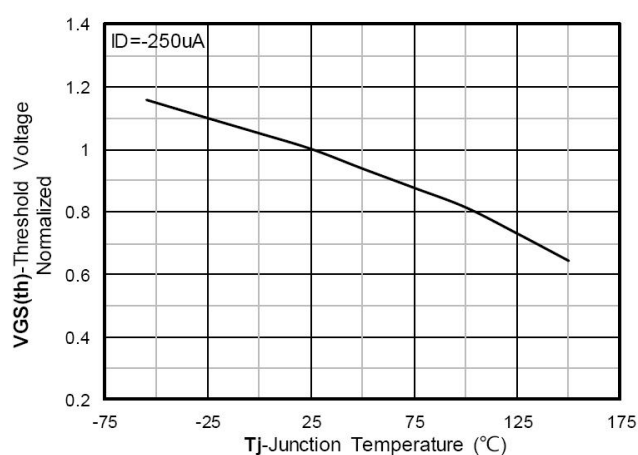


Figure 10. Normalized Threshold voltage

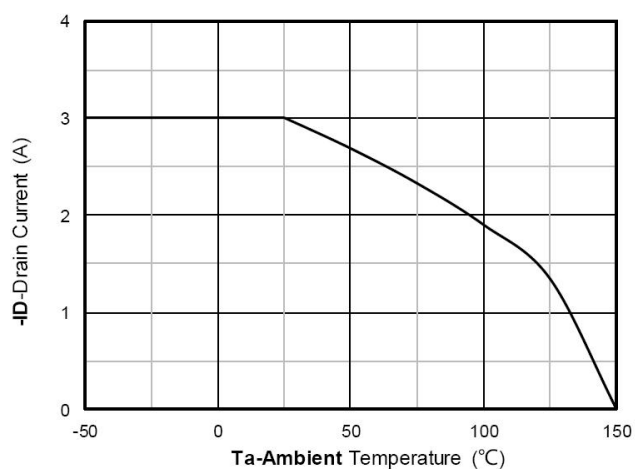


Figure 11. Current dissipation

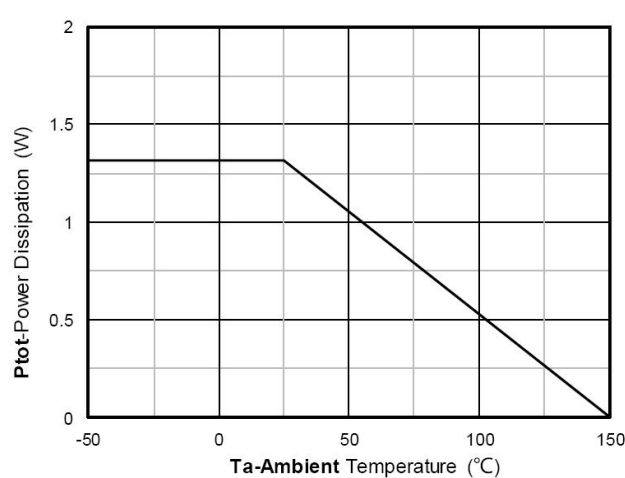


Figure 12. Power dissipation

P- Channel Typical Characteristics

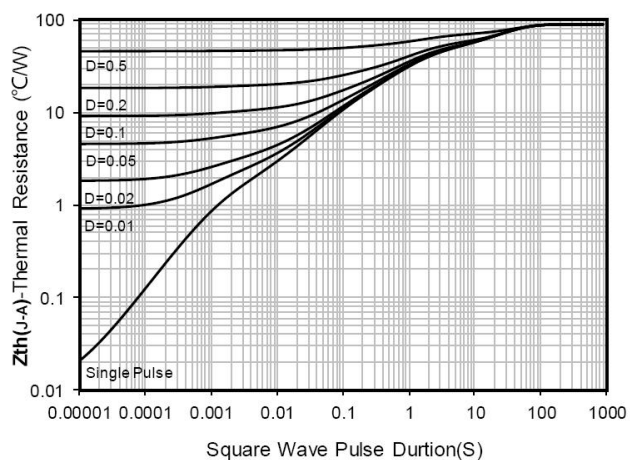


Figure 13. Maximum Transient Thermal Impedance

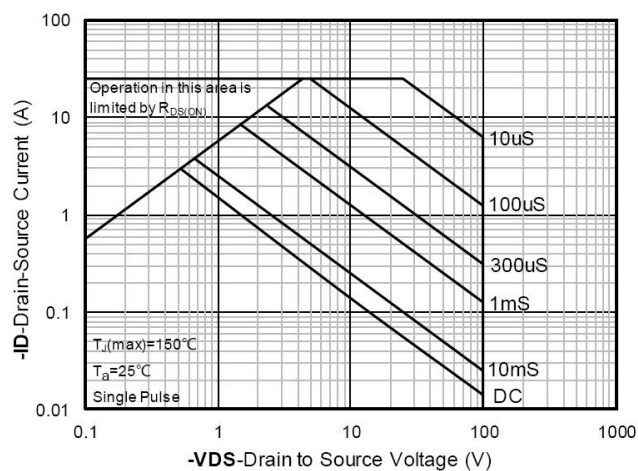
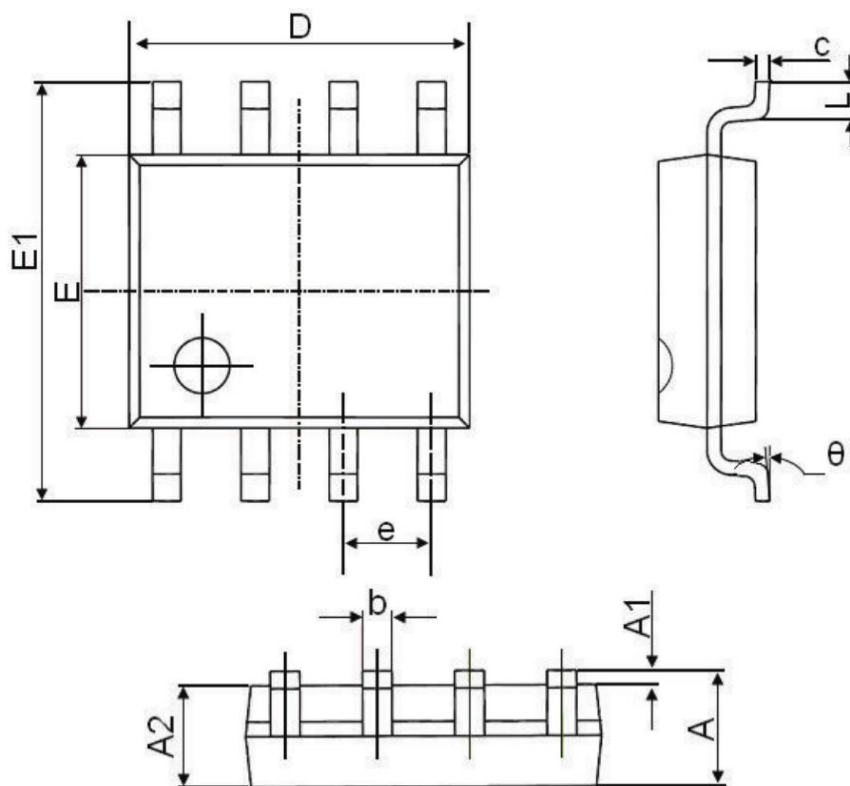


Figure 14. Safe Operation Area

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°