



**Maximum Ratings – Q1** (@TA = +25°C unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	30	V
Gate-Source Voltage			V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	3.4	A
		T <sub>A</sub> = +70°C		2.7	
Continuous Drain Current (Note 6) V <sub>GS</sub> = 4.5V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	2.7	A
		T <sub>A</sub> = +70°C		2.2	
Maximum Continuous Body Diode Forward Current (Note 6)			I <sub>S</sub>	1.5	A
Pulsed Drain Current (Note 6)			I <sub>DM</sub>	25	A

**Maximum Ratings – Q2** (@TA = +25°C unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	-30	V
Gate-Source Voltage			V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 6) V <sub>GS</sub> = -10V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	-2.8	A
		T <sub>A</sub> = +70°C		-2.4	
Continuous Drain Current (Note 6) V <sub>GS</sub> = -4.5V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	-2.3	A
		T <sub>A</sub> = +70°C		-2.1	
Maximum Continuous Body Diode Forward Current (Note 6)			I <sub>S</sub>	-1.5	A
Pulsed Drain Current (Note 6)			I <sub>D</sub>	-20	A

**Thermal Characteristics**

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)	T <sub>A</sub> = +25°C	P <sub>D</sub>	0.84	W
	T <sub>A</sub> = +70°C		0.52	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R <sub>θJA</sub>	155	°C/W
	t < 10s		109	
Total Power Dissipation (Note 6)	T <sub>A</sub> = +25°C	P <sub>D</sub>	1.27	W
	T <sub>A</sub> = +70°C		0.8	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R <sub>θJA</sub>	102	°C/W
	t < 10s		71	
Thermal Resistance, Junction to Case (Note 6)		R <sub>θJC</sub>	34	°C
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Notes: 5. Device mounted on FR-4 substrate PCB, 2oz copper, with minimum recommended pad layout.  
6. Device mounted on FR-4 substrate PCB, 2oz copper, with 1inch square copper plate.

**Electrical Characteristics – Q1 NMOS** (@TA = +25°C unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1.0	$\mu A$	$V_{DS} = 24V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	—	2.3	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	38	60	m $\Omega$	$V_{GS} = 10V, I_D = 3.1A$
			55	100		$V_{GS} = 4.5V, I_D = 2A$
Forward Transfer Admittance	$ Y_{fs} $	—	4	—	S	$V_{DS} = 5V, I_D = 3.1A$
Diode Forward Voltage	$V_{SD}$	—	0.8	1	V	$V_{GS} = 0V, I_S = 1A$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	290	400	pF	$V_{DS} = 15V, V_{GS} = 0V, f = 1.2MHz$
Output Capacitance	$C_{oss}$	—	40	80		
Reverse Transfer Capacitance	$C_{rss}$	—	40	80		
Gate Resistance	$R_g$	—	1.4	—	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge ( $V_{GS} = 4.5V$ )	$Q_g$	—	4	6	nC	$V_{DS} = 15V, V_{GS} = 4.5V, I_D = 3.1A$
Total Gate Charge ( $V_{GS} = 10V$ )	$Q_g$	—	9	13		
Gate-Source Charge	$Q_{gs}$	—	1.2	—		
Gate-Drain Charge	$Q_{gd}$	—	1.5	—	ns	$V_{DS} = 15V, V_{GS} = 10V, I_D = 3A$
Turn-On Delay Time	$t_{D(on)}$	—	3	—		
Turn-On Rise Time	$t_r$	—	5	—		
Turn-Off Delay Time	$t_{D(off)}$	—	13	—		
Turn-Off Fall Time	$t_f$	—	3	—		

Notes: 7. Short duration pulse test used to minimize self-heating effect.  
8. Guaranteed by design. Not subject to product testing.

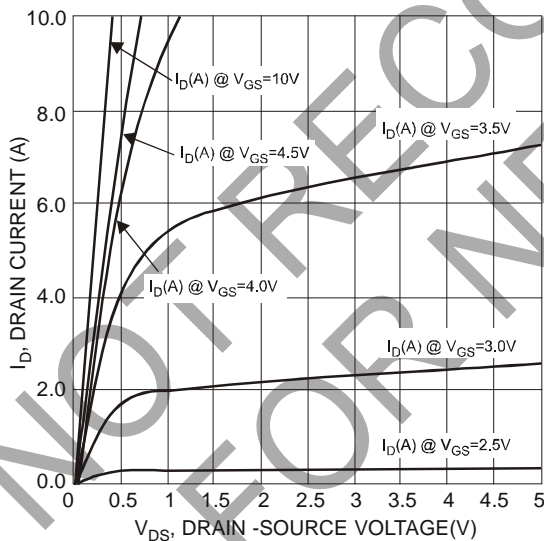


Fig. 1 Typical Output Characteristics

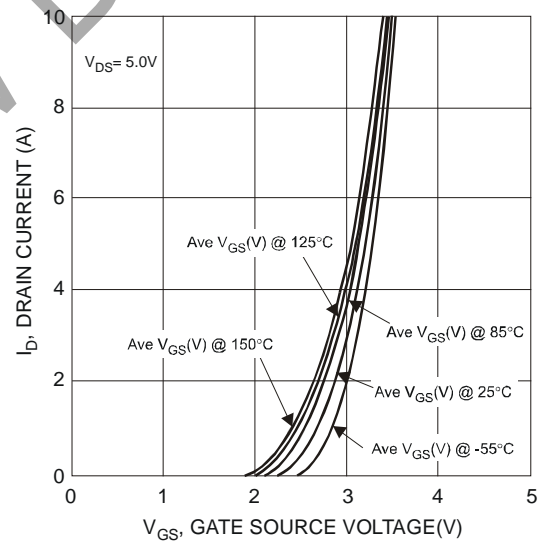


Fig. 2 Typical Transfer Characteristics

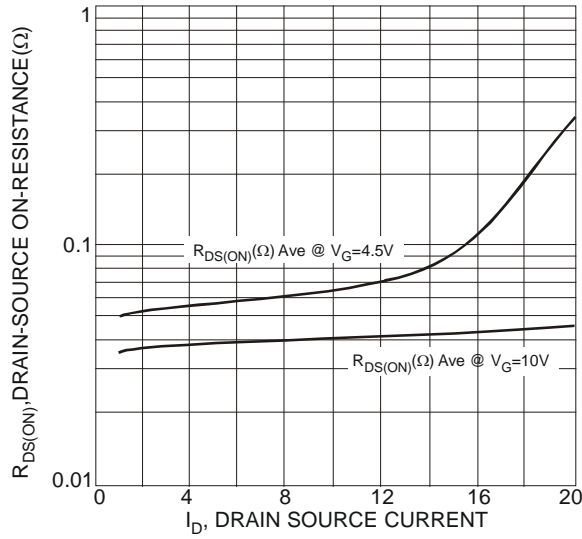


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

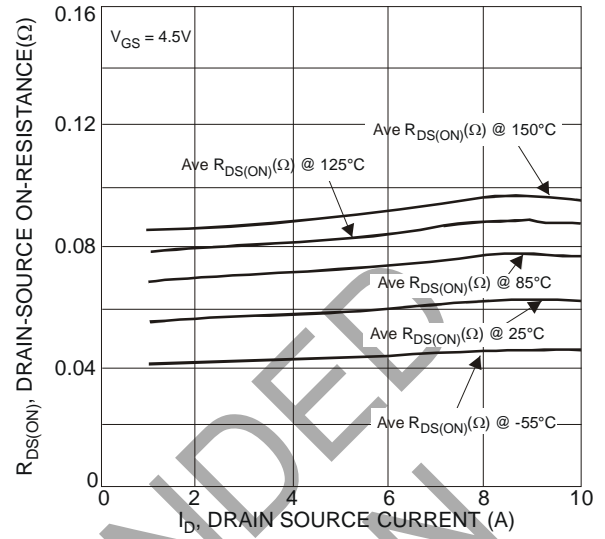


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

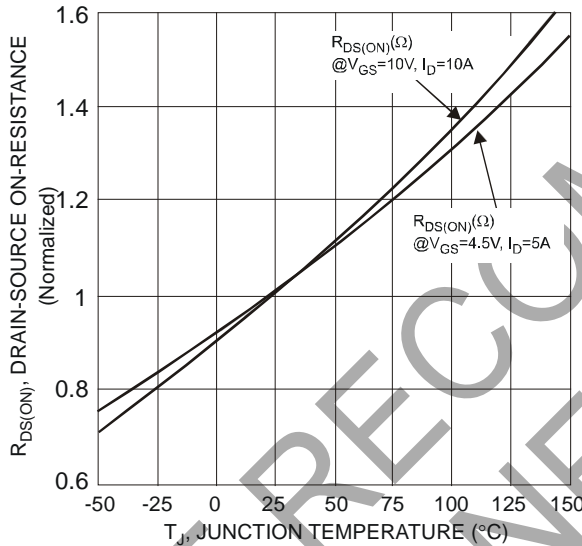


Fig. 5 On-Resistance Variation with Temperature

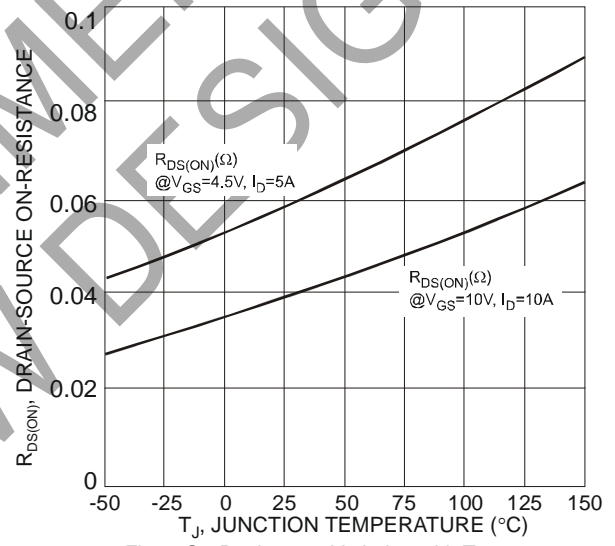


Fig. 6 On-Resistance Variation with Temperature

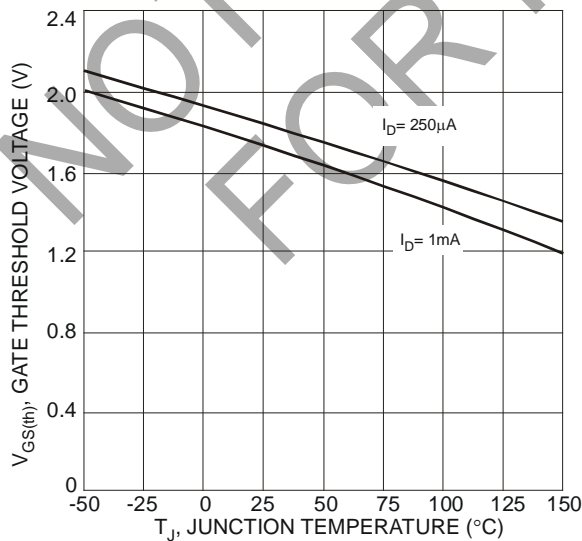


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

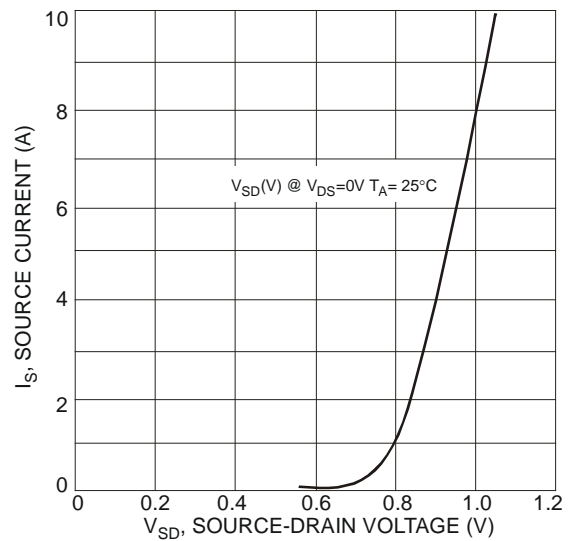


Fig. 8 Diode Forward Voltage vs. Current

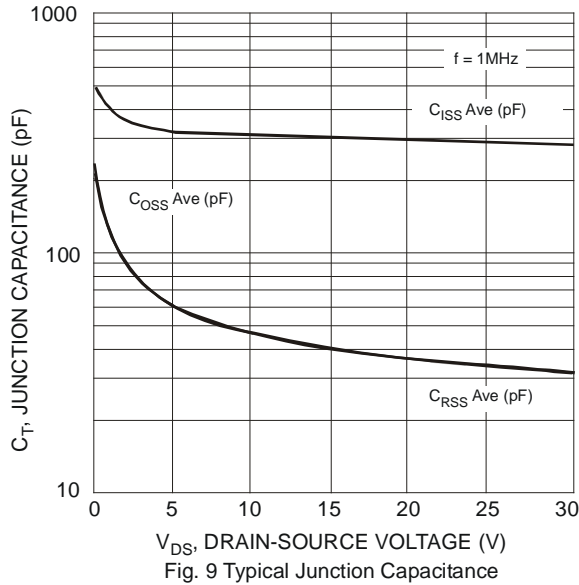


Fig. 9 Typical Junction Capacitance

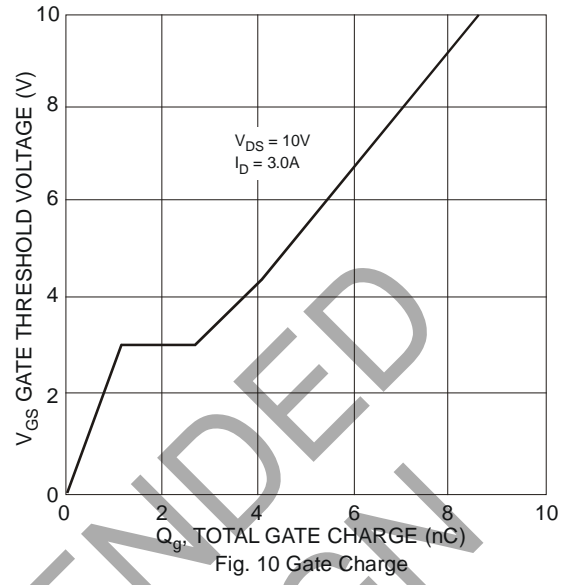


Fig. 10 Gate Charge

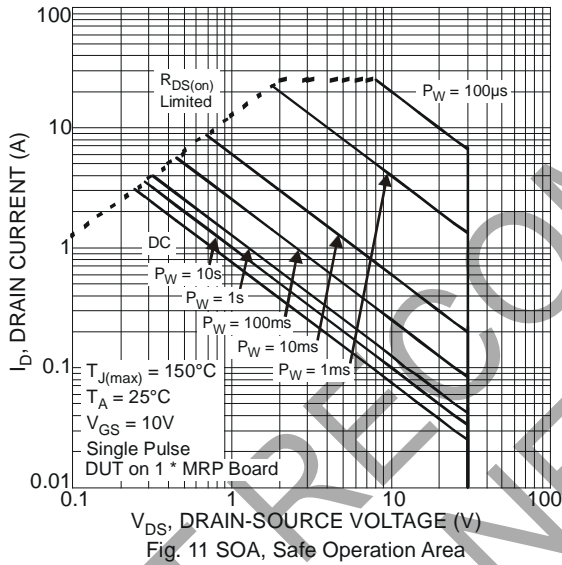


Fig. 11 SOA, Safe Operation Area

# Electrical Characteristics – Q2 PMOS (@TA = +25°C unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-30	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	-1.0	$\mu A$	$V_{DS} = -24V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	—	-2.3	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	73	95	m $\Omega$	$V_{GS} = -10V, I_D = -2.7A$
			99	140		$V_{GS} = -4.5V, I_D = -2A$
Forward Transfer Admittance	$ Y_{fs} $	—	6	—	S	$V_{DS} = -5V, I_D = -2.7A$
Diode Forward Voltage	$V_{SD}$	—	-0.8	-1.0	V	$V_{GS} = 0V, I_S = -1A$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	350	420	pF	$V_{DS} = -15V, V_{GS} = 0V, f = 1.2MHz$
Output Capacitance	$C_{oss}$	—	50	100		
Reverse Transfer Capacitance	$C_{rss}$	—	45	80		
Gate Resistance	$R_g$	—	17.1	—	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge ( $V_{GS} = -4.5V$ )	$Q_g$	—	4	6	nC	$V_{DS} = -15V, V_{GS} = -4.5V, I_D = -3A$
Total Gate Charge ( $V_{GS} = -10V$ )	$Q_g$	—	7	9		
Gate-Source Charge	$Q_{gs}$	—	0.9	—		
Gate-Drain Charge	$Q_{gd}$	—	1.2	—		
Turn-On Delay Time	$t_{D(on)}$	—	4.8	—	ns	$V_{GS} = -10V, V_{DS} = -15V, R_G = 6\Omega, R_L = 15\Omega$
Turn-On Rise Time	$t_r$	—	7.3	—		
Turn-Off Delay Time	$t_{D(off)}$	—	20	—		
Turn-Off Fall Time	$t_f$	—	13	—		

Notes: 7. Short duration pulse test used to minimize self-heating effect.  
8. Guaranteed by design. Not subject to production testing.

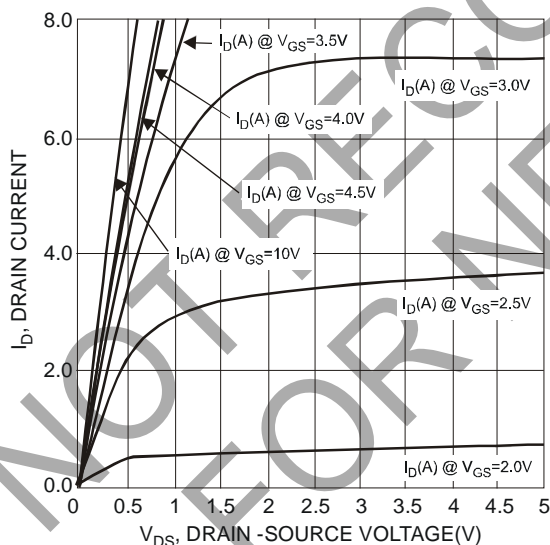


Fig. 12 Typical Output Characteristics

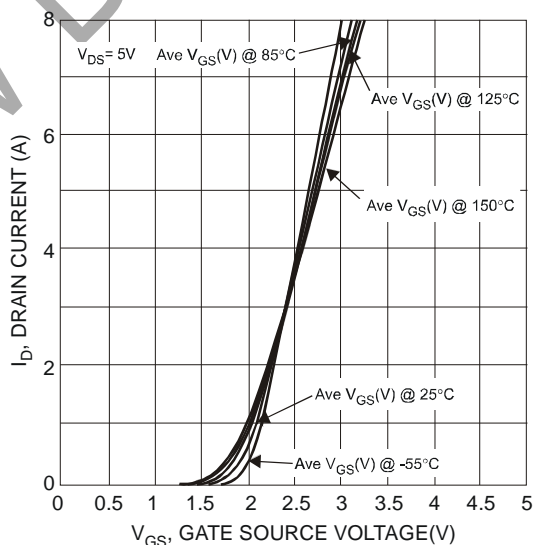


Fig. 13 Typical Transfer Characteristics

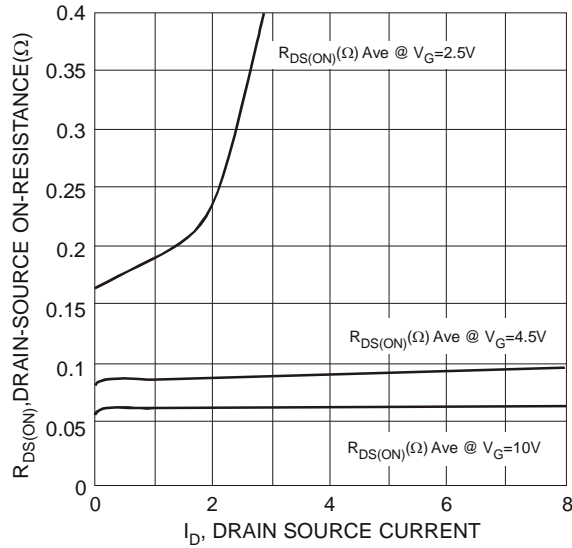


Fig. 14 Typical On-Resistance vs. Drain Current and Gate Voltage

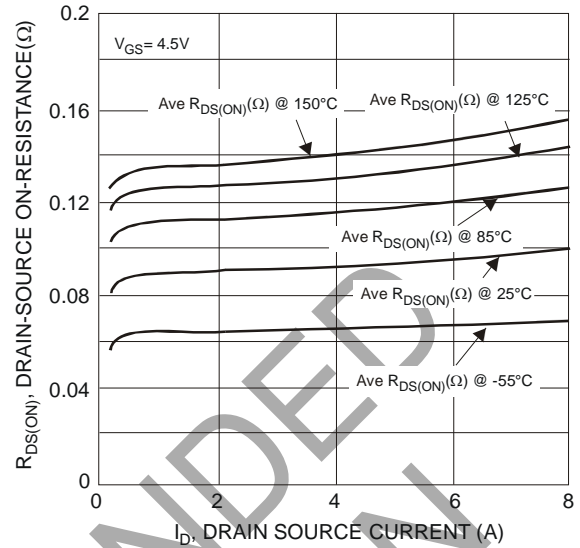


Fig. 15 Typical On-Resistance vs. Drain Current and Temperature

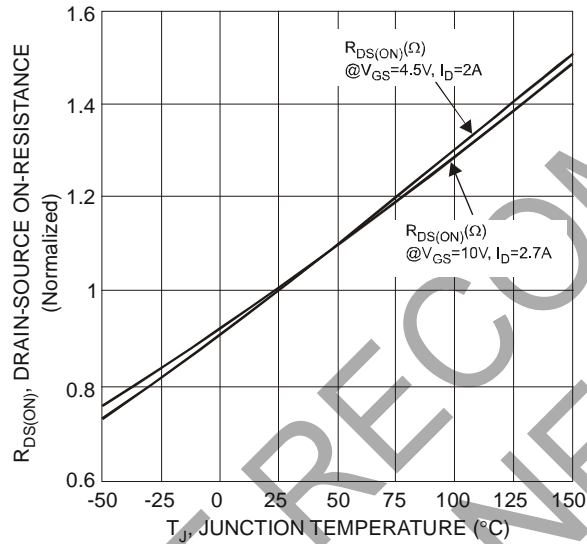


Fig. 16 On-Resistance Variation with Temperature

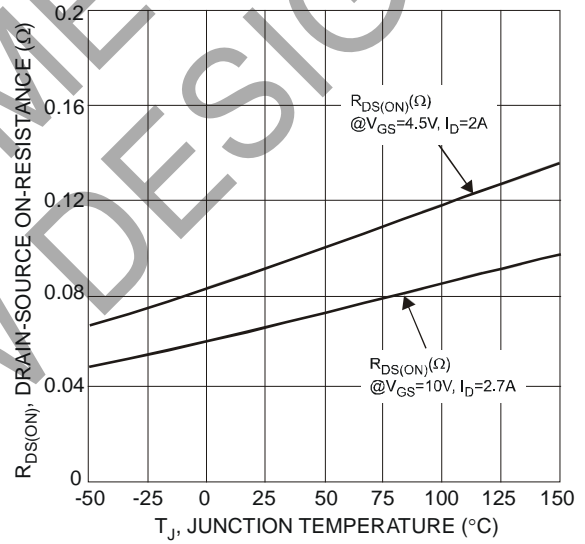


Fig. 17 On-Resistance Variation with Temperature

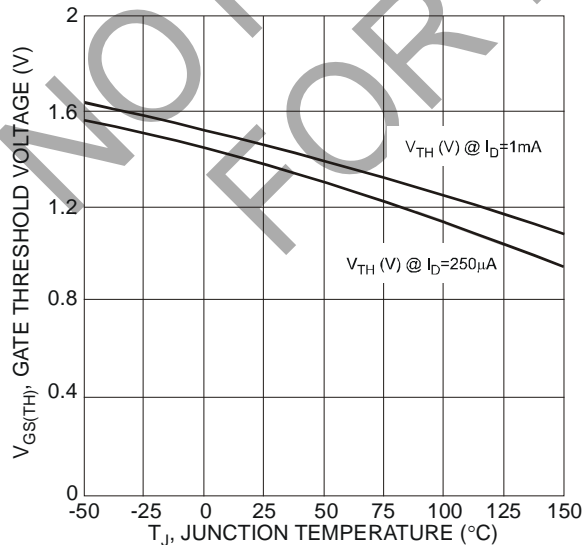


Fig. 18 Gate Threshold Variation vs. Ambient Temperature

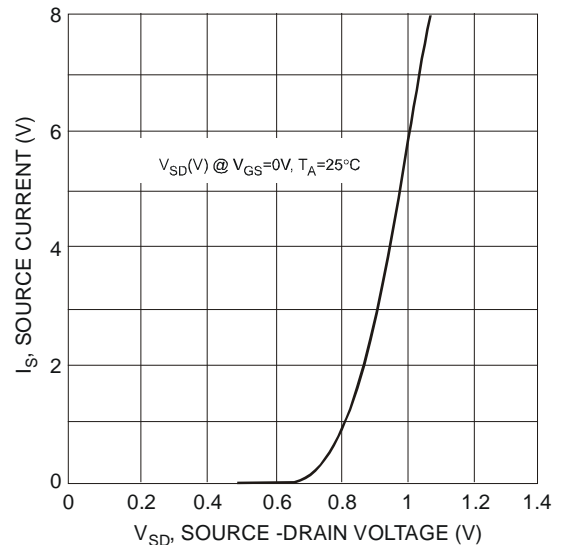
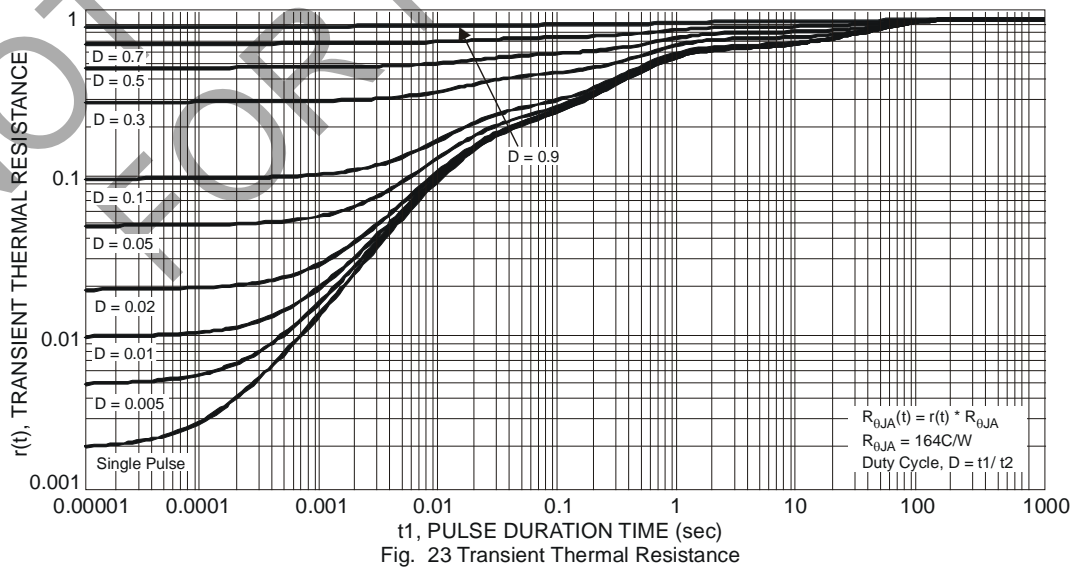
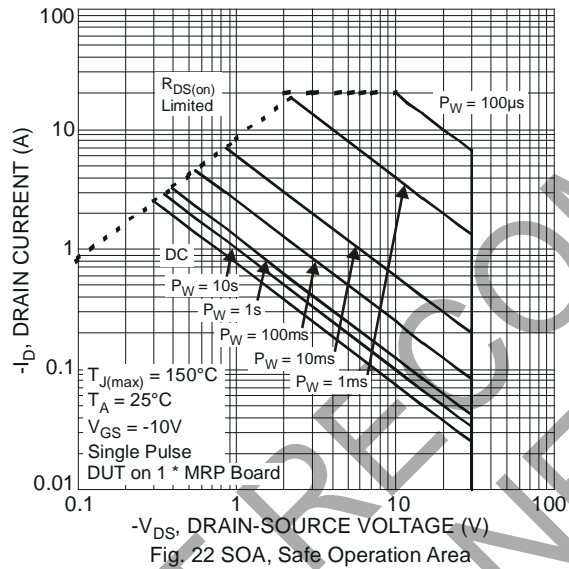
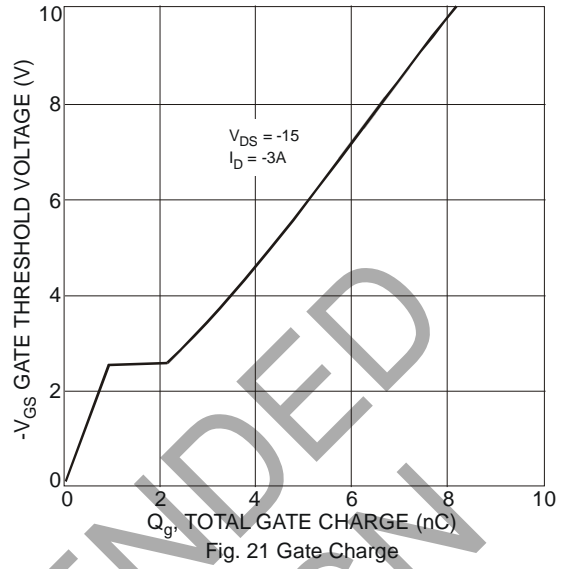
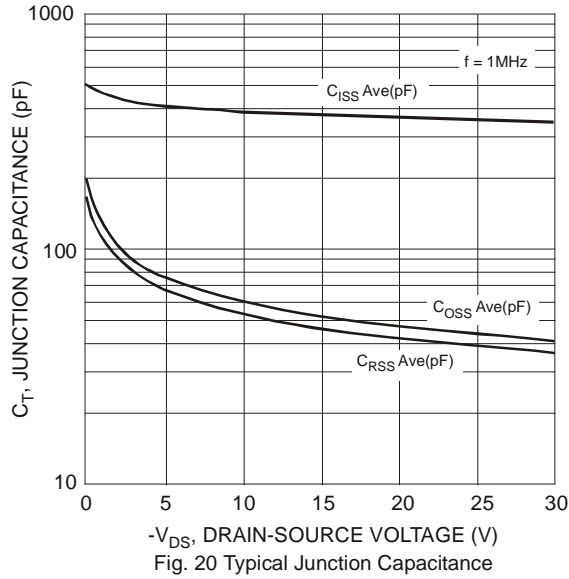


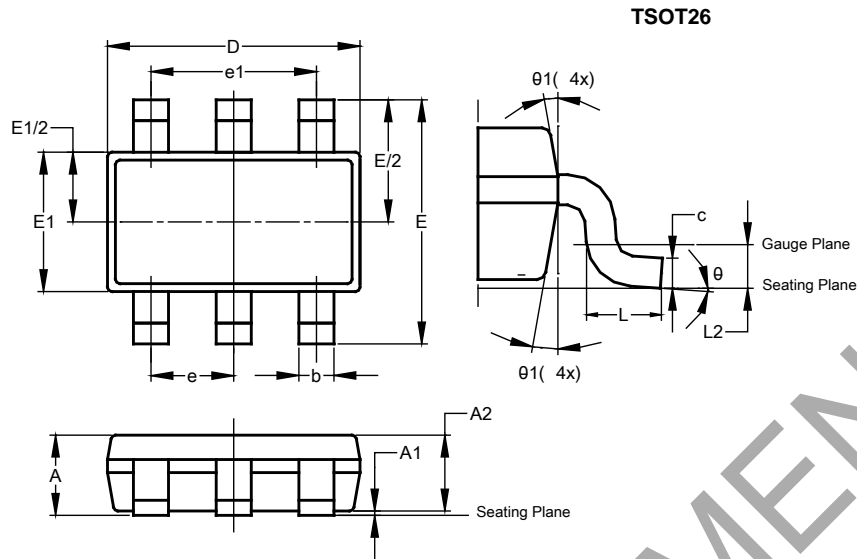
Fig. 19 Diode Forward Voltage vs. Current





## Package Outline Dimensions

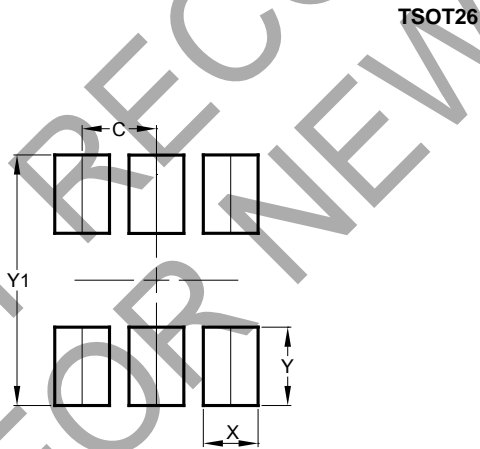
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



TSOT26			
Dim	Min	Max	Typ
A	—	1.00	—
A1	0.010	0.100	—
A2	0.840	0.900	—
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	—
c	0.120	0.200	—
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	—
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	—
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199

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