



YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

0755-83047638

ysbdt@szyoushang.cn

www.szyoushang.cn



企业微信二维码



企业QQ二维码

Product Summary

Device	BV _{DSS}	R _{DS(on)} Max		I _D Max T _A = +25°C
Q1	20V	0.4Ω @ V _{GS} = 4.5V		1.34A
		0.5Ω @ V _{GS} = 2.5V		1.65A
Q2	-20V	0.7Ω @ V _{GS} = -4.5V		-1.14A
		0.9Ω @ V _{GS} = -2.5V		-0.94A

Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage V_{GS(TH)} < 1V
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Complementary Pair MOSFET
- Ultra-Small Surface Mount Package

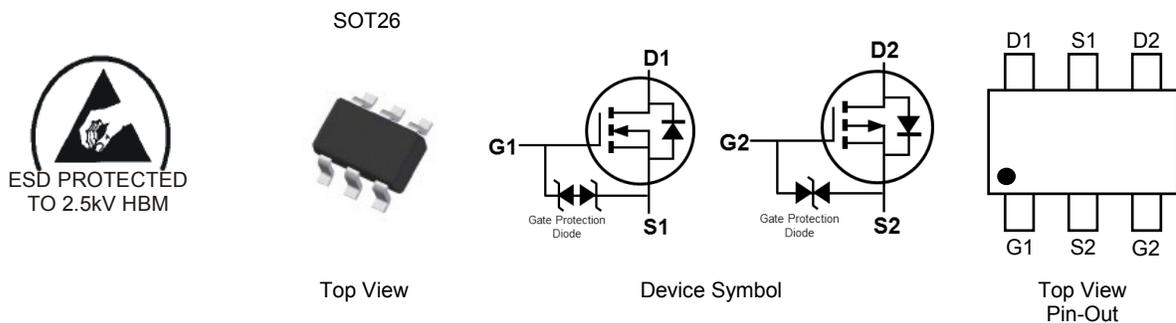
Description and Applications

This MOSFET has been designed to minimize the on-state resistance (R_{DS(on)}) and yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

- Portable Electronics

Mechanical Data

- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.015 grams (Approximate)



Maximum Ratings N-CHANNEL – Q1 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 6	V
Drain Current (Note 5)	I_D	$T_A = +25^\circ\text{C}$	1.34
		$T_A = +85^\circ\text{C}$	0.97
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)	I_{DM}	5	A
Pulsed Body Diode Forward Current (10 μs Pulse, Duty Cycle = 1%)	I_{SM}	5	A

Maximum Ratings P-CHANNEL – Q2 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	± 6	V
Drain Current (Note 5)	I_D	$T_A = +25^\circ\text{C}$	-1.14
		$T_A = +85^\circ\text{C}$	-1.07
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)	I_{DM}	-2.5	A
Pulsed Body Diode Forward Current (10 μs Pulse, Duty Cycle = 1%)	I_{SM}	-2.5	A

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1.12	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	111	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_{JL}, T_{STG}	-55 to +150	$^\circ\text{C}$

Note: 5. For a device mounted on 25mm x 25mm FR-4 PCB board with a high coverage of single sided 1oz copper, in still air conditions with two active die.

Electrical Characteristics N-CHANNEL – Q1 (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	20	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	100	nA	V _{DS} = 20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±1.0	μA	V _{GS} = ±4.5V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	0.5	—	1.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	0.3	0.4	Ω	V _{GS} = 4.5V, I _D = 600mA
		—	0.4	0.5		V _{GS} = 2.5V, I _D = 500mA
		—	0.5	0.7		V _{GS} = 1.8V, I _D = 350mA
Forward Transfer Admittance	Y _{fs}	—	1.4	—	S	V _{DS} = 10V, I _D = 400mA
Diode Forward Voltage (Note 6)	V _{SD}	—	0.7	1.2	V	V _{GS} = 0V, I _S = 150mA
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	—	60.67	—	pF	V _{DS} = 16V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	9.68	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	5.37	—	pF	
Total Gate Charge	Q _g	—	736.6	—	pC	V _{GS} = 4.5V, V _{DS} = 10V, I _D = 250mA
Gate-Source Charge	Q _{gs}	—	93.6	—		
Gate-Drain Charge	Q _{gd}	—	116.6	—		
Turn-On Delay Time	t _{D(on)}	—	5.1	—	ns	V _{DD} = 10V, V _{GS} = 4.5V, R _L = 47Ω, R _G = 10Ω, I _D = 200mA
Turn-On Rise Time	t _R	—	7.4	—		
Turn-Off Delay Time	t _{D(off)}	—	26.7	—		
Turn-Off Fall Time	t _F	—	12.3	—		

Electrical Characteristics P-CHANNEL – Q2 (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	-20	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-100	nA	V _{DS} = -20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±1.0	μA	V _{GS} = ±4.5V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	-0.5	—	-1.0	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	0.5	0.7	Ω	V _{GS} = -4.5V, I _D = -430mA
		—	0.7	0.9		V _{GS} = -2.5V, I _D = -300mA
		—	1.0	1.3		V _{GS} = -1.8V, I _D = -150mA
Forward Transfer Admittance	Y _{fs}	—	-0.9	—	S	V _{DS} = -10V, I _D = -250mA
Diode Forward Voltage (Note 6)	V _{SD}	—	-0.8	-1.2	V	V _{GS} = 0V, I _S = -150mA
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	—	59.76	—	pF	V _{DS} = -16V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	12.07	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	6.36	—	pF	
Total Gate Charge	Q _g	—	622.4	—	pC	V _{GS} = -4.5V, V _{DS} = -10V, I _D = -250mA
Gate-Source Charge	Q _{gs}	—	100.3	—		
Gate-Drain Charge	Q _{gd}	—	132.2	—		
Turn-On Delay Time	t _{D(on)}	—	5.1	—	ns	V _{DD} = -10V, V _{GS} = -4.5V, R _L = 47Ω, R _G = 10Ω, I _D = -200mA
Turn-On Rise Time	t _R	—	8.1	—		
Turn-Off Delay Time	t _{D(off)}	—	28.4	—		
Turn-Off Fall Time	t _F	—	20.7	—		

Note: 6. Short duration pulse test used to minimize self-heating effect.

N-CHANNEL – Q1

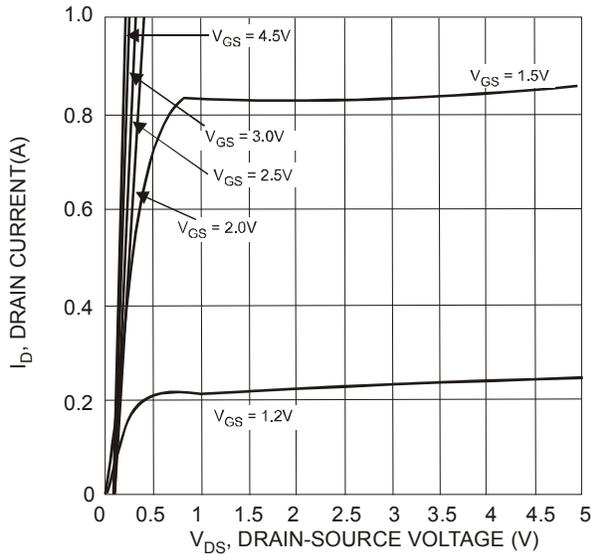


Fig. 1 Typical Output Characteristics

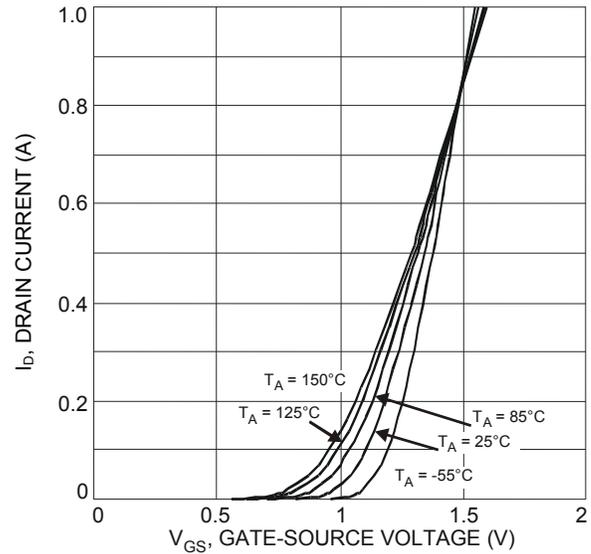


Fig. 2 Typical Transfer Characteristic

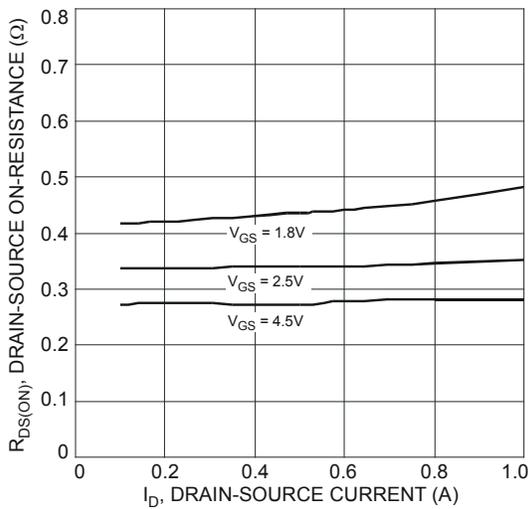


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

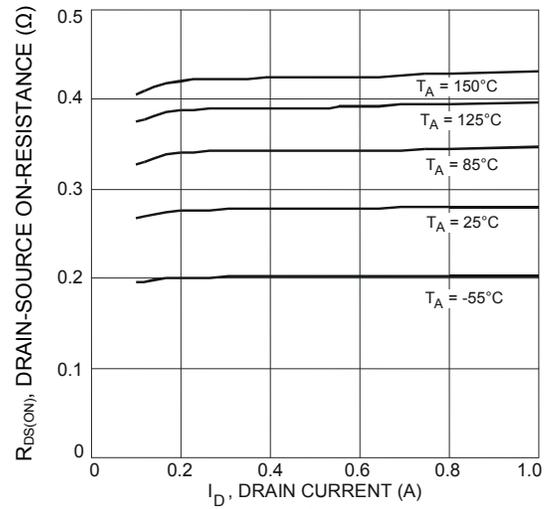


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

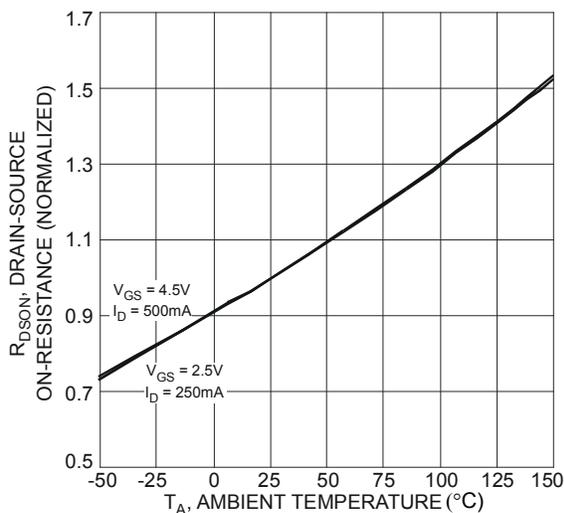


Fig. 5 On-Resistance Variation with Temperature

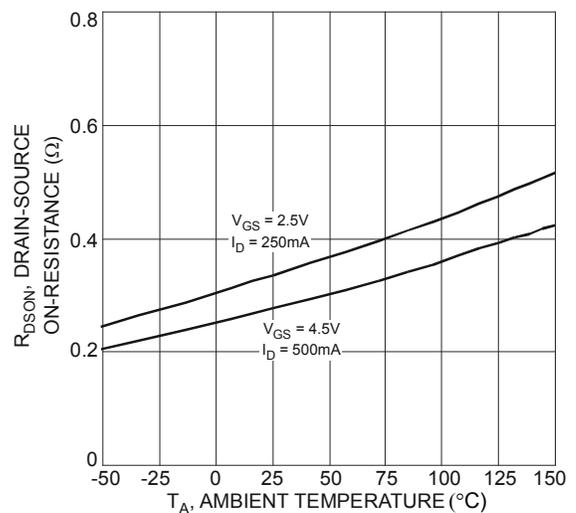


Fig. 6 On-Resistance Variation with Temperature

N-CHANNEL – Q1 (continued)

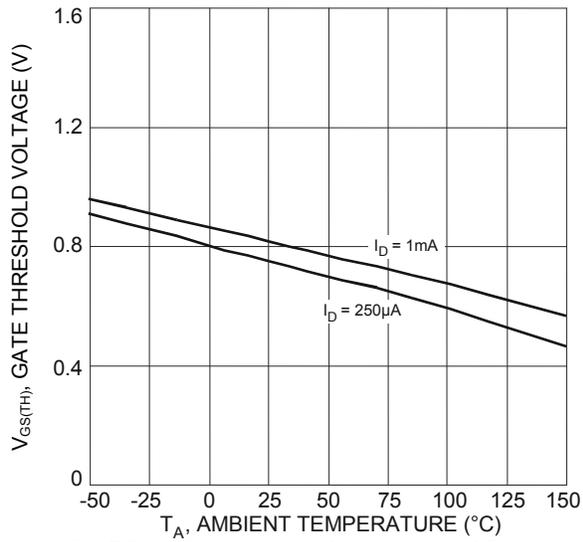


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

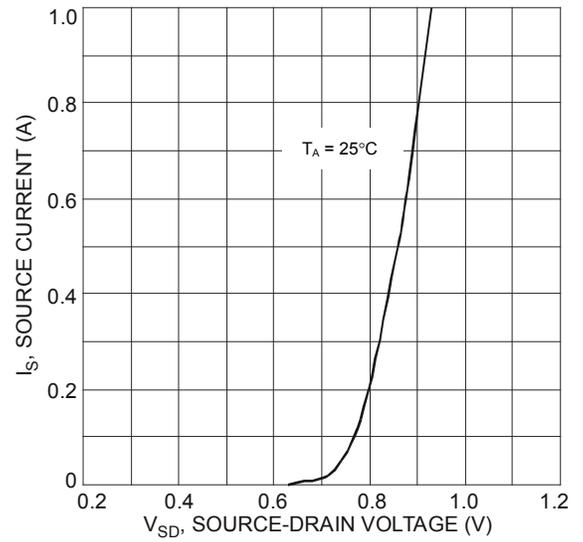


Fig. 8 Diode Forward Voltage vs. Current

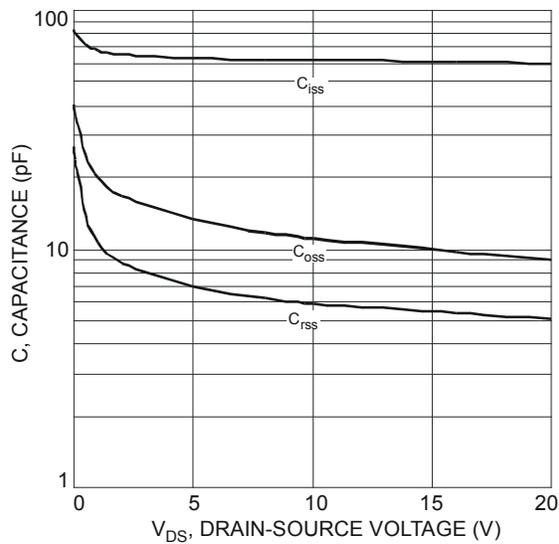


Fig. 9 Typical Total Capacitance

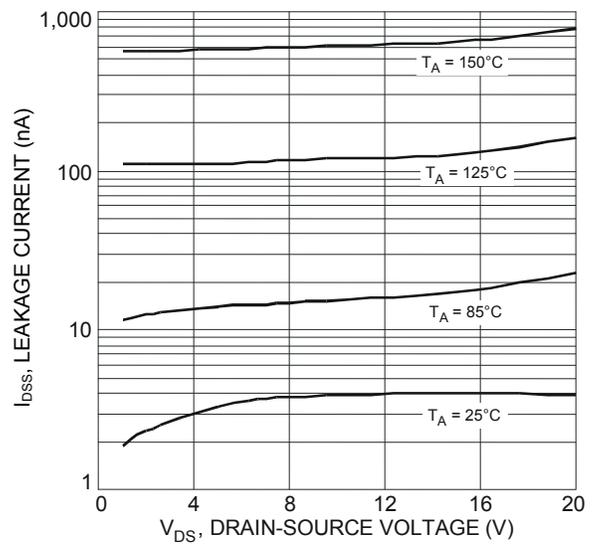
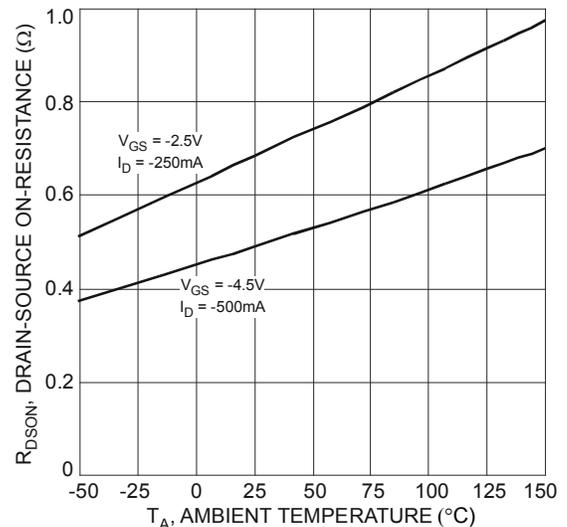
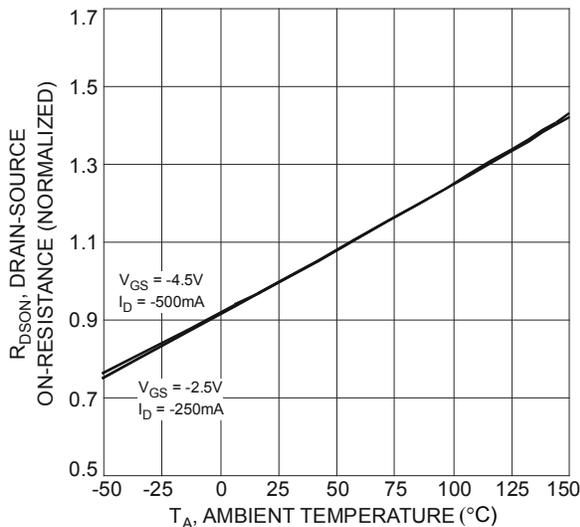
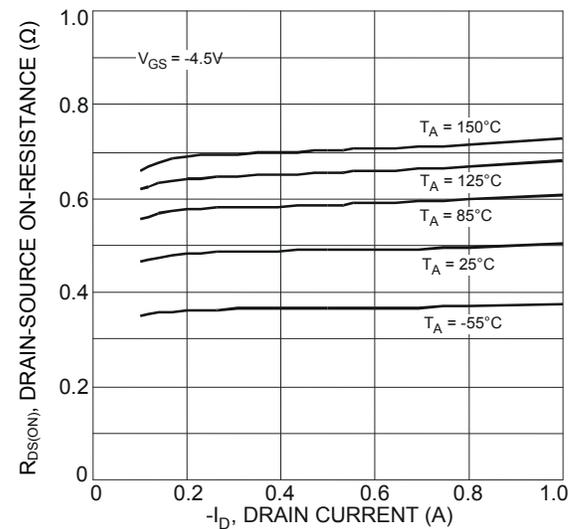
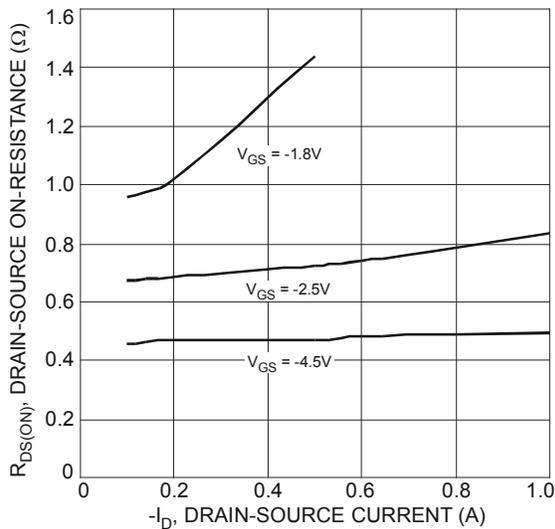
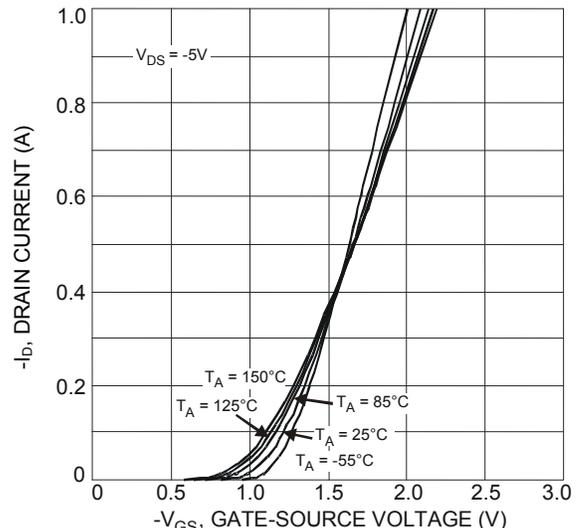
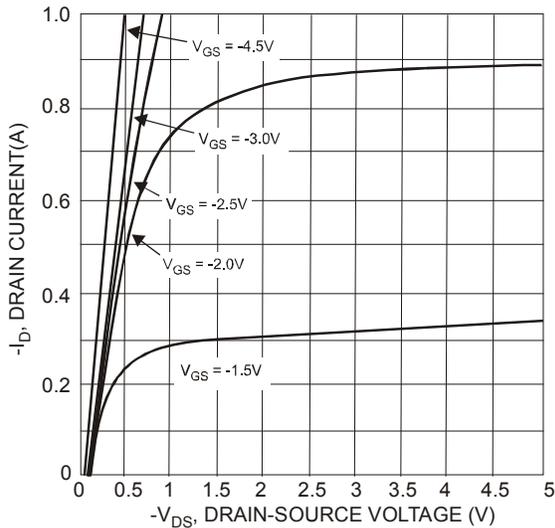
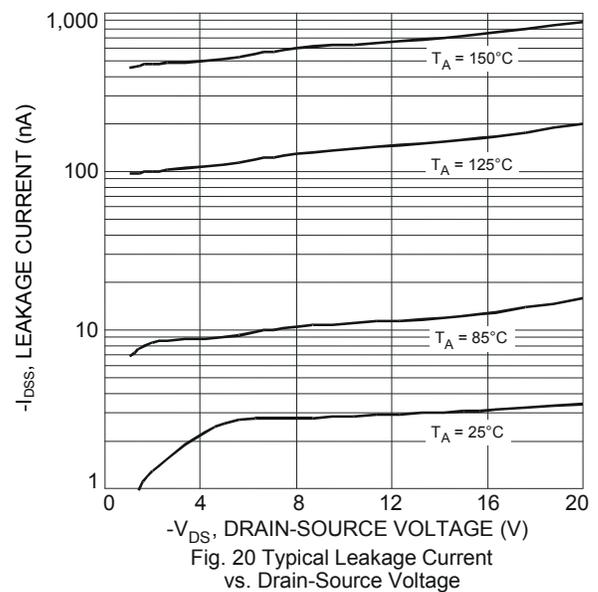
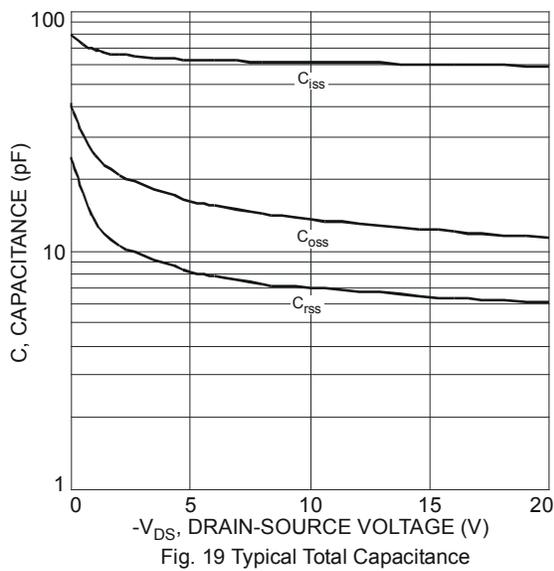
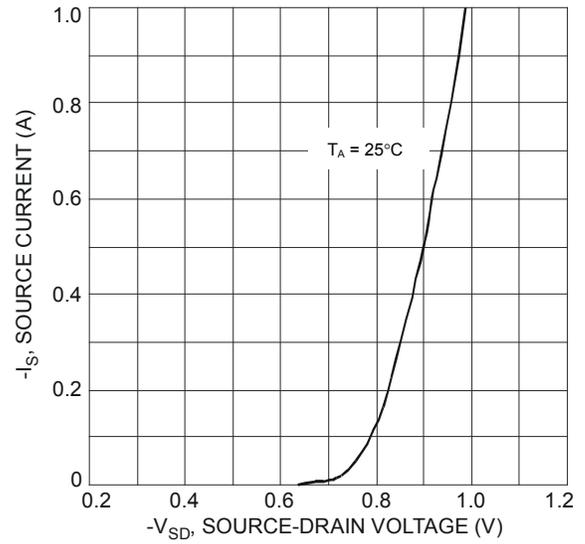
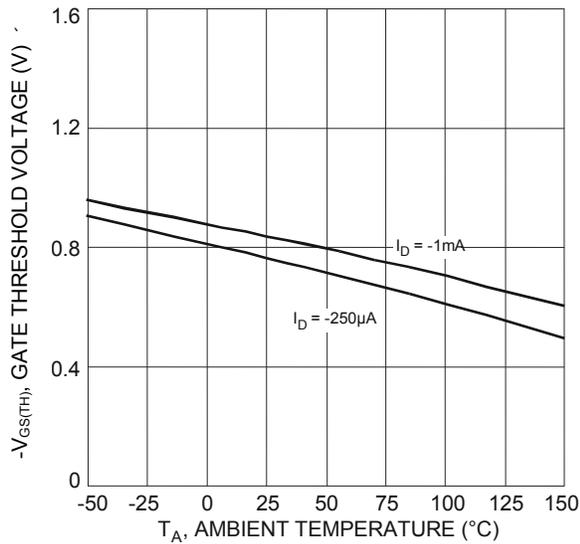


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

P-CHANNEL – Q2

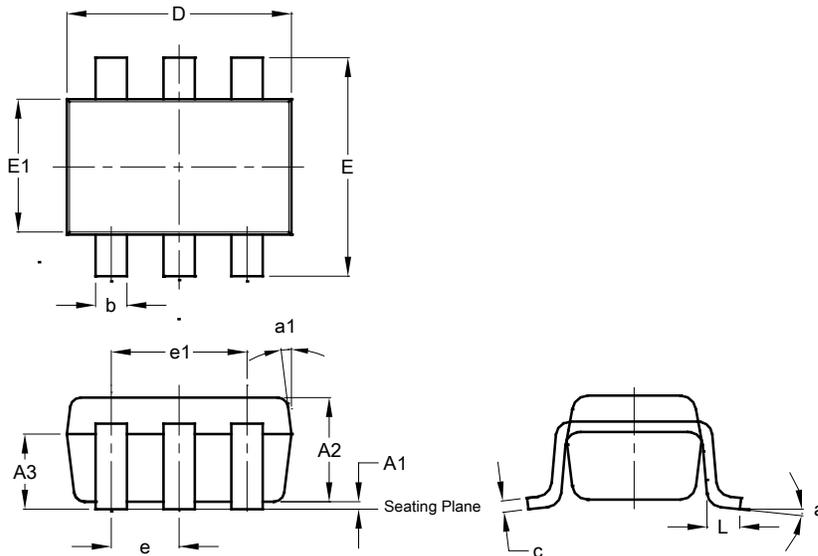


P-CHANNEL – Q2 (continued)



Package Outline Dimensions

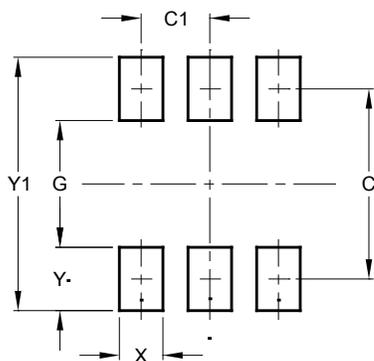
SOT26



SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout

SOT26



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20