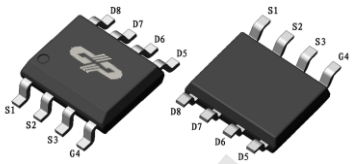
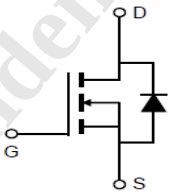
Product Summary

Part #	V_{DS}	$R_{DS(on).typ}$	I_D
DP180N10SGL2	100V	15mΩ	12A

SOP-8





Features

- Uses advanced Trench MOSFET-DPMOS technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g x R_{DS(on)}$ product(FOM)
- Qualified according to JEDEC criteria

Applications

- Motor control and drive
- Battery management
- UPS (Uninterrupible Power Supplies)

100% Avalanche Tested

100% Rg Tested

Package Marking and Ordering Information

Part #	Marking	Package	Packing
DP180N10SGL2	180N10S	SOP-8	Reel/Tape

Halogen-Free

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	100	V
Continuous drain current T_C = 25°C (Silicon limit) T_C = 100°C (Silicon limit)	I_D	 12 8	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	48	A
Avalanche energy, single pulse (L=0.3mH, Rg=25)[1]	E_{AS}	33	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25°C)	P_{tot}	4.8	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C

[1].EAS is tested at starting Tj = 25°C, VGS = 10V.

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	26	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	62	

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	100	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	1	1.7	2.5	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=100V,V_{GS}=0V T_j=25°C T_j=150°C
Gate-source leakage current	I_{GSS}	-	±10	±100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	- -	15.0 18.0	19.0 23.0	mΩ	T_j=25°C V_{GS}=10V, I_D=12A V_{GS}=4.5V, I_D=10A
Gate resistance	R_g	-	1.3	5	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz
Transconductance[2]	g_{fs}	-	35	-	S	V_{DS}=5V,I_D=10A
Dynamic Characteristic[2]						
Input Capacitance	C_{iss}	-	1450	-	pF	V_{GS}=0V, V_{DS}=50V, f=1MHz
Output Capacitance	C_{oss}	-	210	-		
Reverse Transfer Capacitance	C_{rss}	-	12	-		
Gate Total Charge	Q_g	-	21	-	nC	V_{GS}=10V, V_{DS}=50V, I_D=10A, f=1MHz
Gate-Source charge	Q_{gs}	-	4	-		
Gate-Drain charge	Q_{gd}	-	2.9	-		
Turn-on delay time	$t_{d(on)}$	-	6	-	ns	V_{GS}=10V, V_{DD}=50V, R_{G_ext}=3Ω
Rise time	t_r	-	3	-		
Turn-off delay time	$t_{d(off)}$	-	48	-		
Fall time	t_f	-	5	-		

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.88	1.3	V	V_{GS}=0V,I_{SD}=12A
Diode continuous forward current	I_s	-	12	-	A	TC = 25°C
Diode pluse current	$I_{s\ pluse}$	-	48	-	A	TC = 25°C
Body Diode Reverse Recovery Time[2]	t_{rr}	-	18	-	ns	I_F=12A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge[2]	Q_{rr}	-	40	-	nC	

[2]. Defined by design. Not subject to production test

Typical Performance Characteristics

Fig 1: Output Characteristics

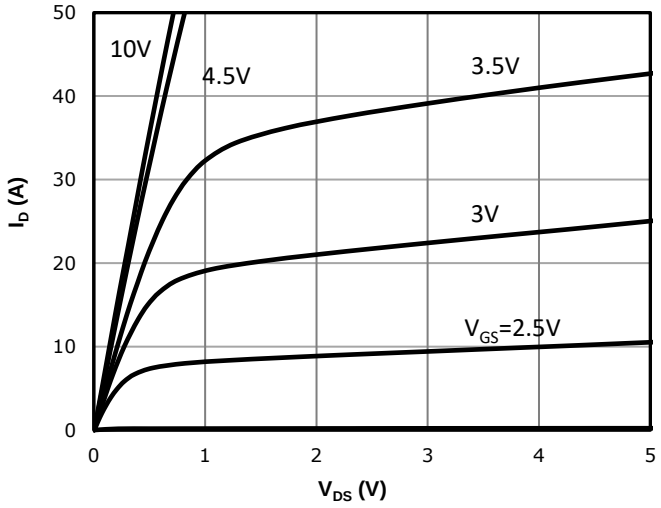


Fig 2: Transfer Characteristics

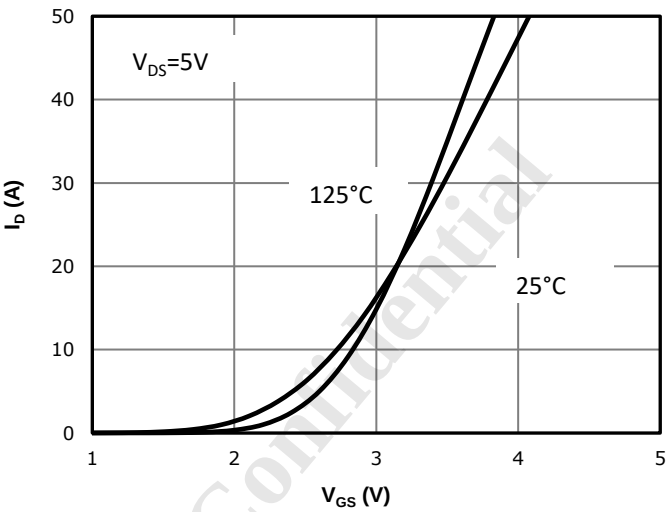


Fig 3: Rds(on) vs Drain Current and Gate Voltage

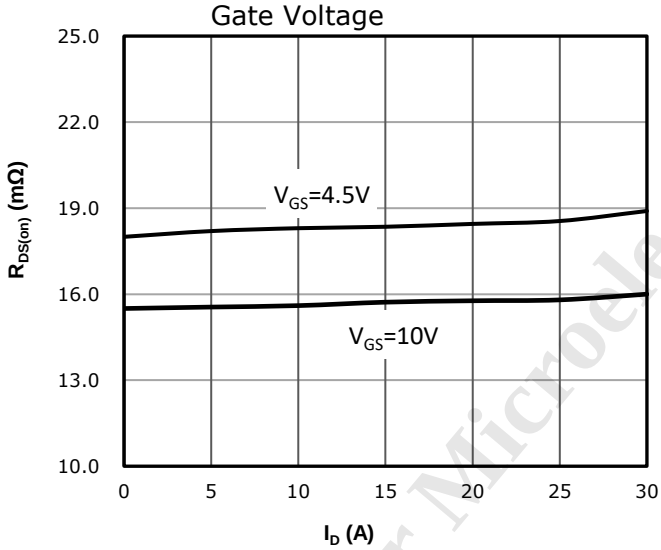


Fig 4: Rds(on) vs Gate Voltage

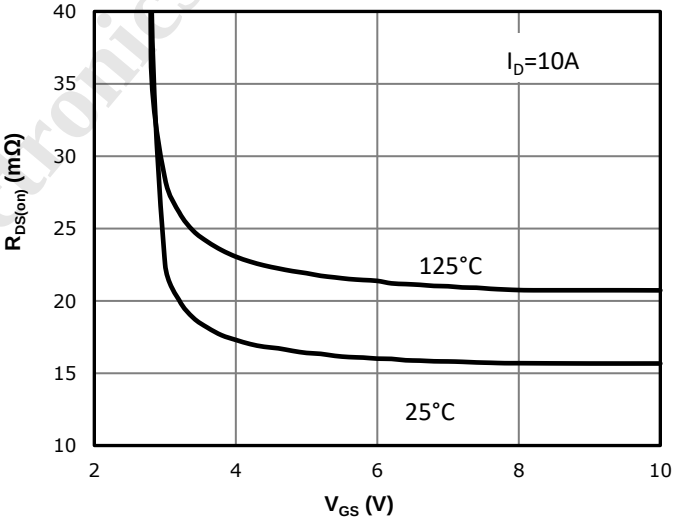


Fig 5: Rds(on) vs. Temperature

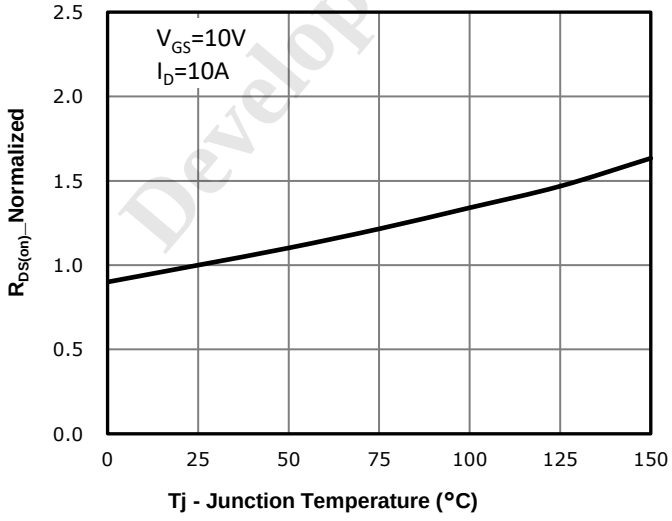


Fig 6: Capacitance Characteristics

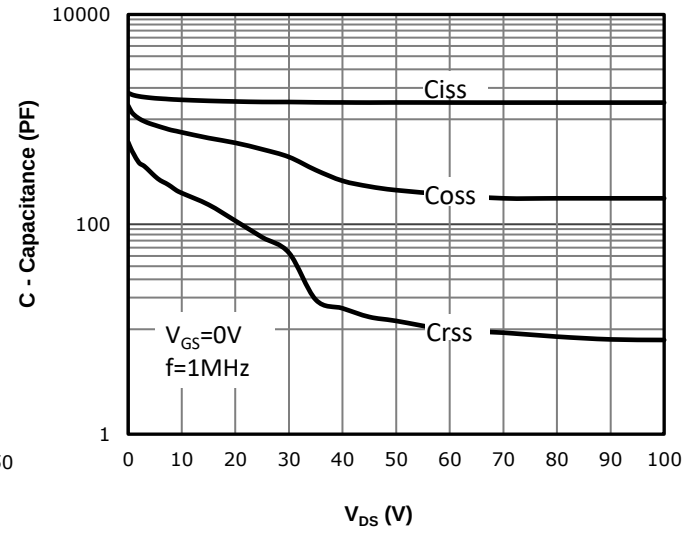


Fig 7: Gate Charge Characteristics

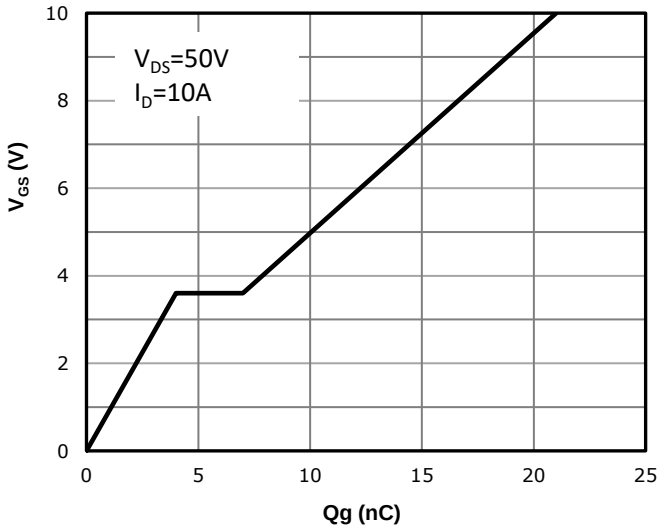


Fig 8: Body-diode Forward Characteristics

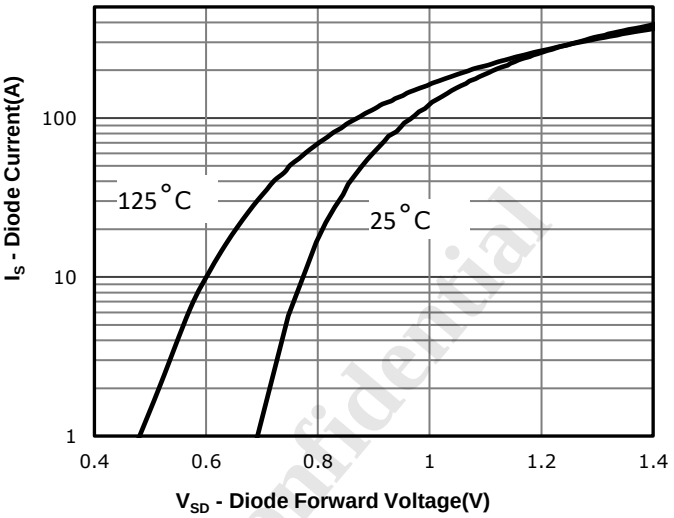


Fig 9: Power Dissipation

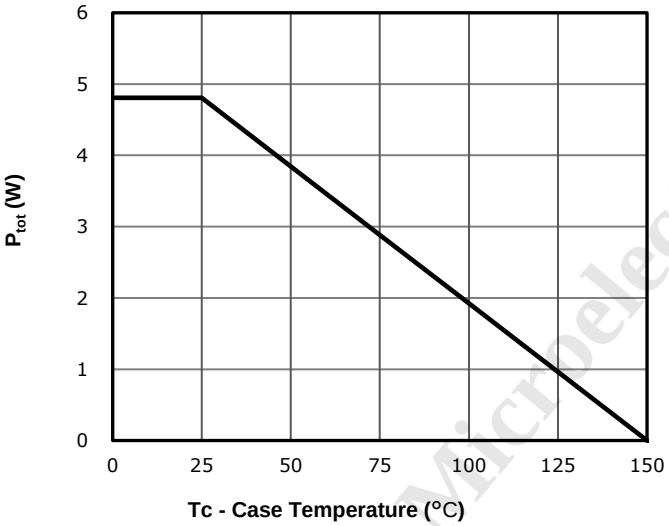


Fig 10: Drain Current Derating

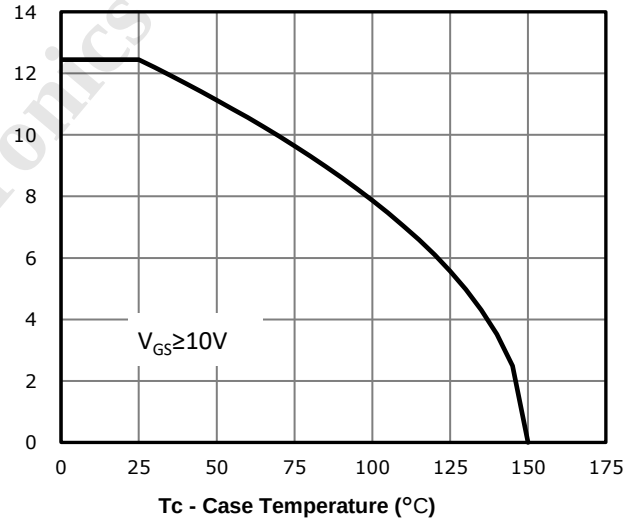


Fig 11: Safe Operating Area

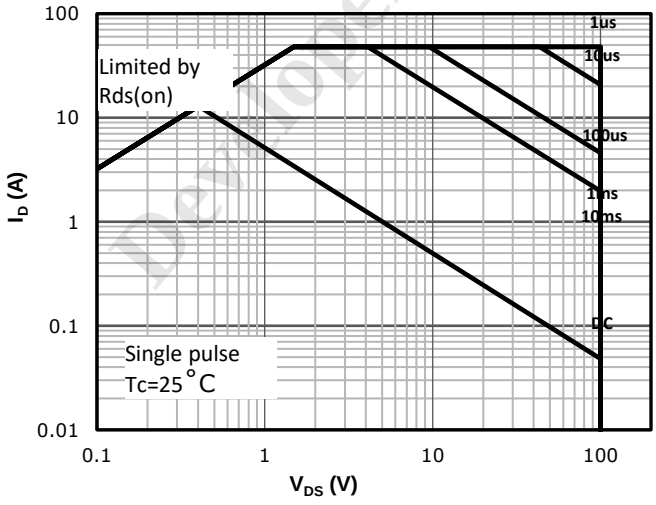
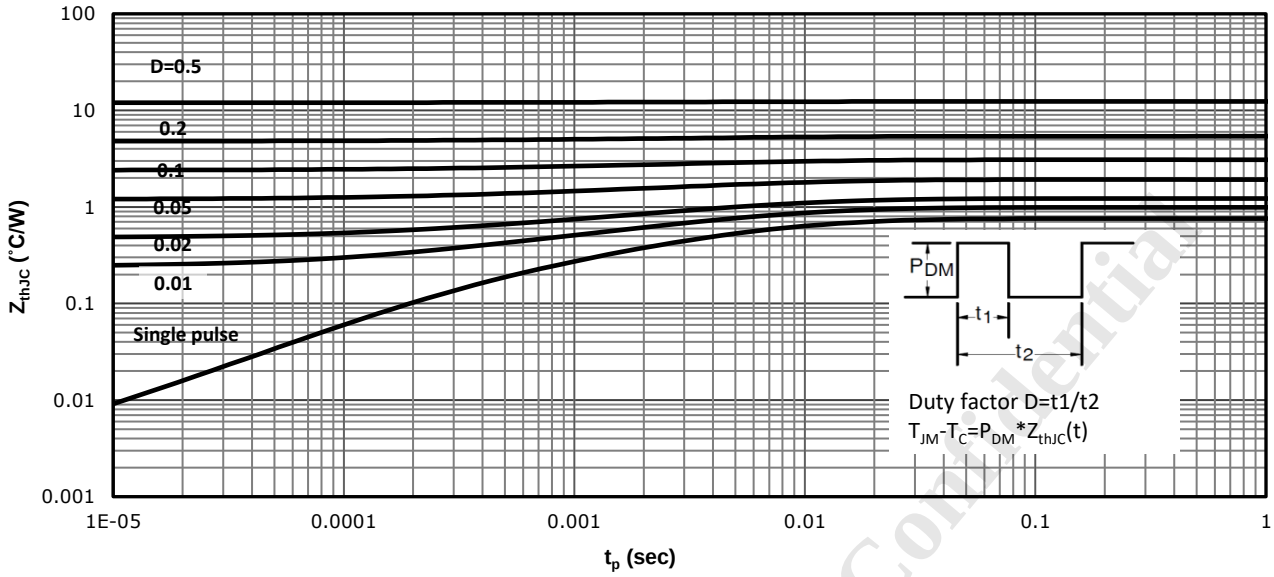
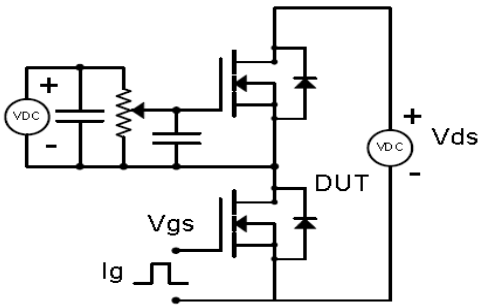


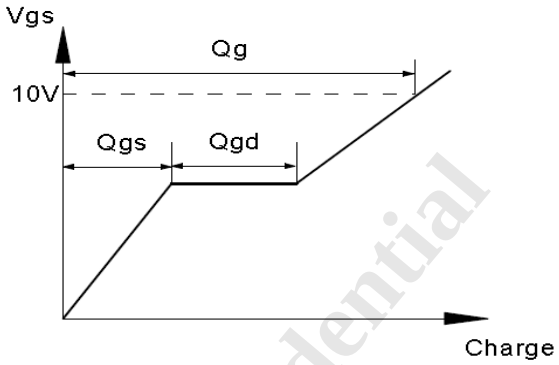
Fig 12: Max. Transient Thermal Impedance



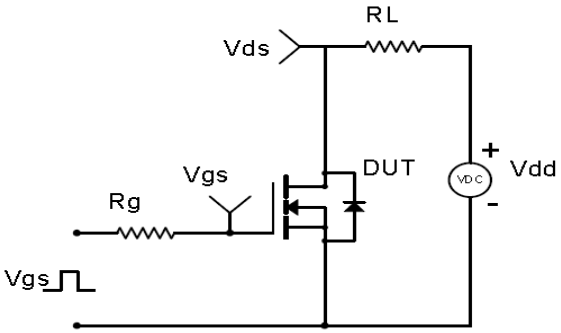
Test Circuit & Waveform

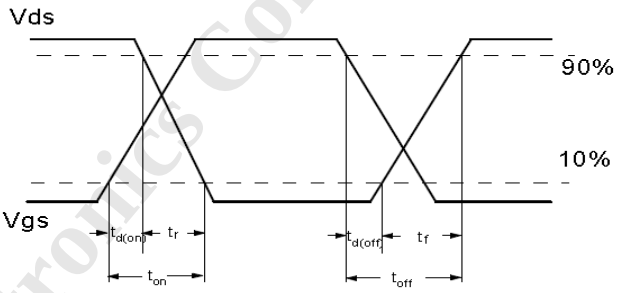
Gate Charge Test Circuit & Waveform



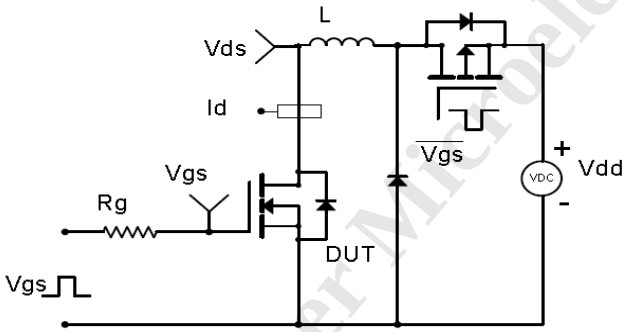


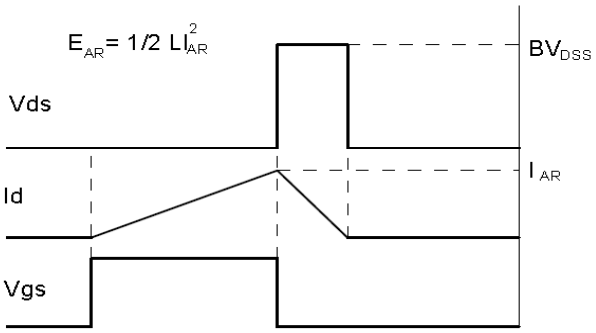
Resistive Switching Test Circuit & Waveforms



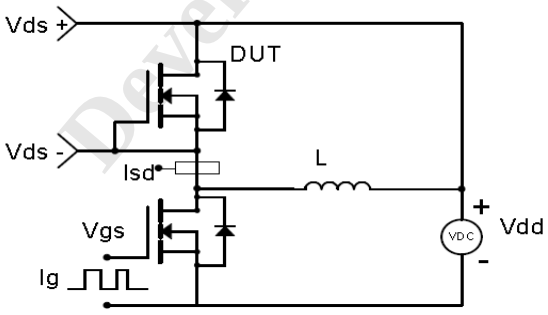


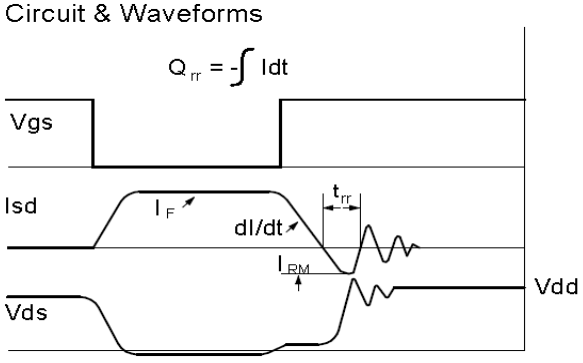
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



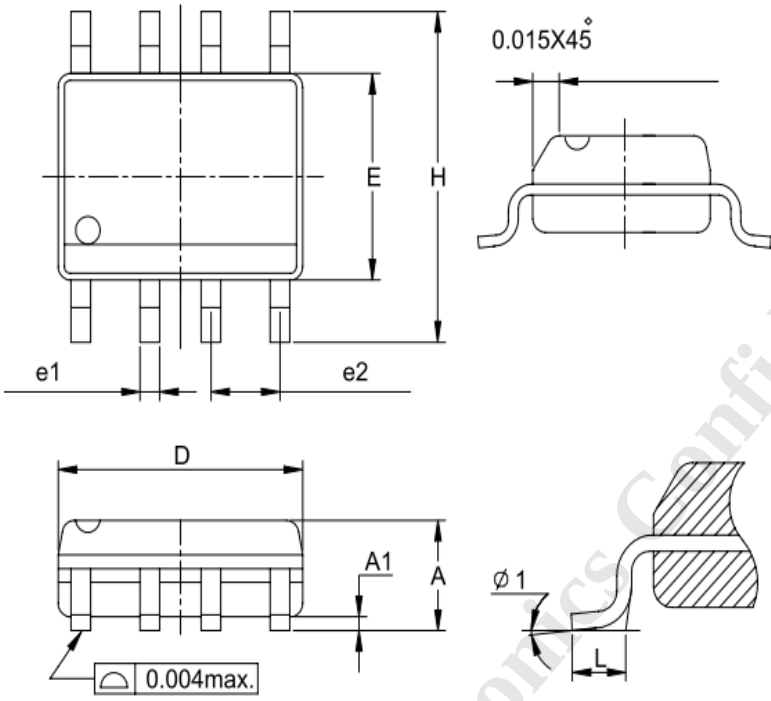


Diode Recovery Test Circuit & Waveforms



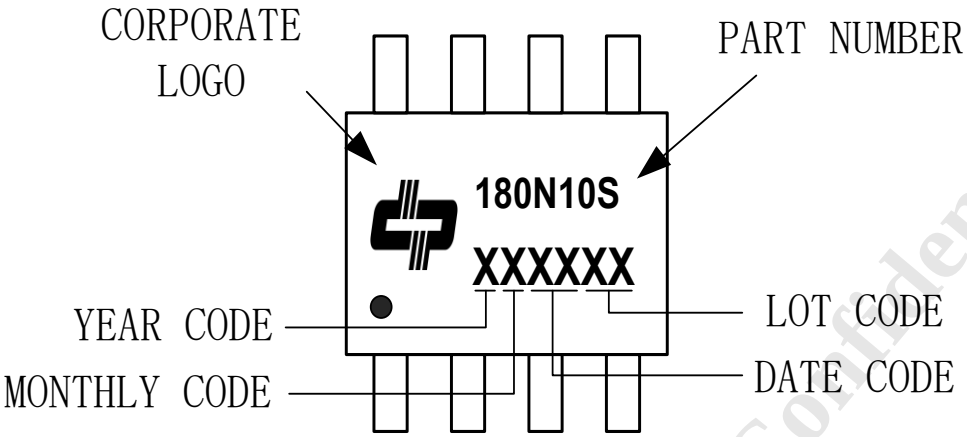


Package Outline: SOP-08



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
e1	0.33	0.51	0.013	0.020
e2	1.27BSC		0.5BSC	
Φ1	8°		8°	

Part Marking Information



Revison	Major changes
0.5	Release for initial version

重要声明Important Notice

(1)本公司一直致力于提高产品的质量和可靠度，但所有的半导体产品都有一定的失效概率，这些失效概率可能会导致一些人身事故、火灾事故等。当设计产品时，请充分留意冗余设计并采用安全指标，这样可以避免事故的发生。

(2)德普微产品既不打算也不保证在任何产品故障或者失效可能导致人员生命损失、人身伤害或严重财产损失的系统或设备中使用。此类申请被视为"不安全使用"。不安全使用包括但不限于：外科手术设备、原子能控制仪器、飞机或宇宙飞船仪器、为车辆使用设计的动力、制动或安全系统的控制或操作、交通信号仪器、所有类型的安全装置以及旨在支持或维持生命的其他应用。所有不安全的使用应由客户承担风险，如果第三方因客户的不安全使用而向德普微提出索赔，客户应赔偿德普微因此产生的损害和责任。

(3)请注意在本资料记载的条件范围内使用产品，特别请注意绝对最大额定值、工作电压范围和电气特性等。 因在本资料记载的条件范围外使用产品而造成的故障和 (或) 事故等的损害，本公司对此概不承担任何责任。

(4)在搬运、安装或客户操作中，请注意由于外部因素（ESD、EOS、热应力和机械应力、徒手触摸产品）导致的故障和特性变化。我们不保证拆卸产品的质量或者在从安装板移除之后重新安装的产品。当使用防潮包装的产品时，应注意保质期和首次打开包装后的经过时间。

(5)由于产品升级、技术改进等原因，此处描述或包含的任何信息可能会发生更改，恕不另行通知。客户在下订单前应联系德普微获取最新的相关信息，并验证这些信息是否完整且是最新的。所有产品的销售都遵循在订单确认时所提供的本公司销售条款与条件。

(6)本产品规格书未包含任何针对德普微或第三方所有的知识产权的授权。针对本产品规格书所记载的信息，德普微不做任何明示或暗示的保证，包括但不限于对规格书内容的准确性、商业上的适销性，特定目的的适用性或者不侵犯德普微或任何第三人知识产权做任何明示或暗示保证，德普微也不就因本规格书本身及其使用有关的偶然或必然损失承担任何责任。

(7)使用本公司的IC生产产品时，如因其产品中对该IC的使用方法或产品的规格，或因进口国等原因，包含本IC产品在内的制品发生专利纠纷时，本公司概不承担相应责任。