

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
100V	70mΩ@10V	4A

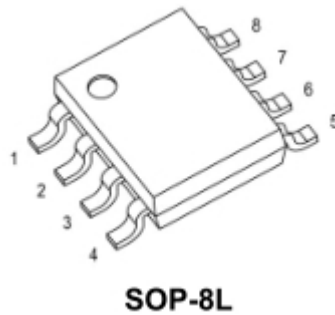
## Feature

- N-Channel
- Enhancement mode
- Very low on-resistance @  $V_{GS}=4.5\text{ V}$
- Fast Switching

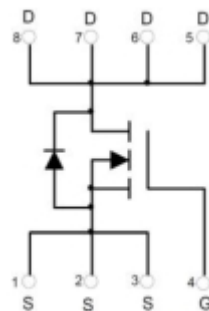
## Application

- Synchronous Rectifier
- Primary Switch For Bridge Topology

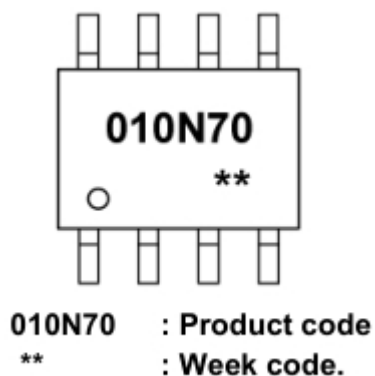
## Package



## Circuit diagram



## Marking



## Absolute maximum ratings

(T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current , V <sub>GS</sub> @ 10V <sup>1</sup>	I <sub>D</sub>	4	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	16	A
Total Power Dissipation	P <sub>D</sub>	1.5	W
Thermal Resistance Junction- ambient <sup>1</sup>	R <sub>θJA</sub>	85	°C/ W
Thermal Resistance Junction-Case <sup>1</sup>	R <sub>θJC</sub>	25	°C/ W
Storage Temperature Range	T <sub>STG</sub>	-55~ +150	°C
Operating Junction and Storage Temperature Range	T <sub>J</sub>	-55~ +150	°C

## Electrical characteristics

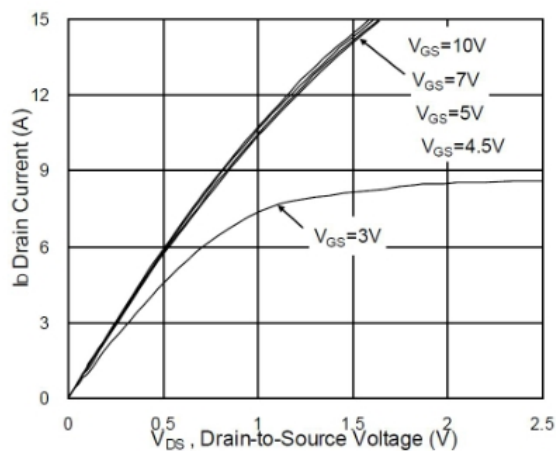
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	100			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V,V <sub>GS</sub> = 0V , T <sub>J</sub> =25°C			1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V , V <sub>DS</sub> =0V			±100	uA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.8	2.5	V
Static Drain-Source on-Resistance <sup>2</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =2A		70	100	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =1A		85	110	
Dynamic characteristics						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =10V, I <sub>D</sub> =2A		26.2	36.7	nC
Gate-Source Charge	Q <sub>gS</sub>			3.8	5.32	
Gate-Drain Charge	Q <sub>gd</sub>			4.8	6.7	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V,V <sub>GS</sub> =0V, f=1MHz		1535	2149	pF
Output Capacitance	C <sub>oss</sub>			60	84	
Reverse Transfer Capacitance	C <sub>rss</sub>			37	52	
Switching Characteristics						
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =50V, V <sub>GS</sub> =10V, R <sub>G</sub> =3.3Ω, I <sub>D</sub> =2A		4.2	8.4	nS
Rise Time	T <sub>r</sub>			7.6	14	
Turn-Off Delay Time	T <sub>d(off)</sub>			41	82	
Fall Time	T <sub>f</sub>			14	28	
Drain-Source Diode Characteristics						
Continuous Source Current <sup>1,4</sup>	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current			2.5	A
Pulsed Source Current <sup>2,4</sup>	I <sub>SM</sub>				10	A
Diode forward voltage <sup>2</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C			1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =2A , d <sub>i</sub> /d <sub>t</sub> =100A/μs ,		35		nS
Reverse Recovery Charge	Q <sub>rr</sub>	T <sub>J</sub> =25°C		17		nC

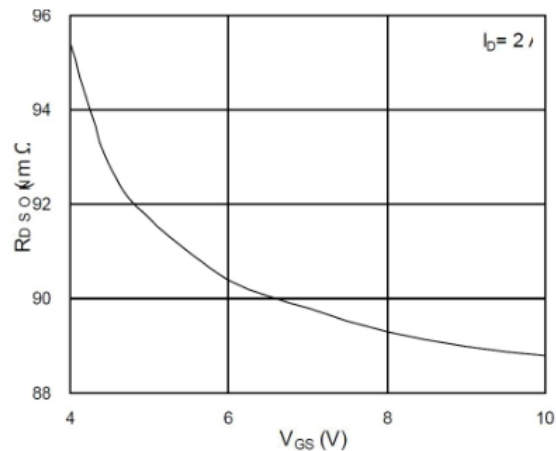
### Notes:

1. The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
3. The power dissipation is limited by  $150^{\circ}\text{C}$  junction temperature
4. The data is theoretically the same as  $I_D$  and  $I_{DM}$ , in real applications, should be limited by total power dissipation.

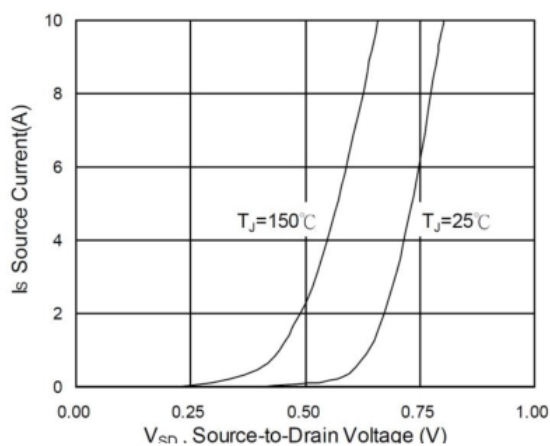
## Typical Characteristics



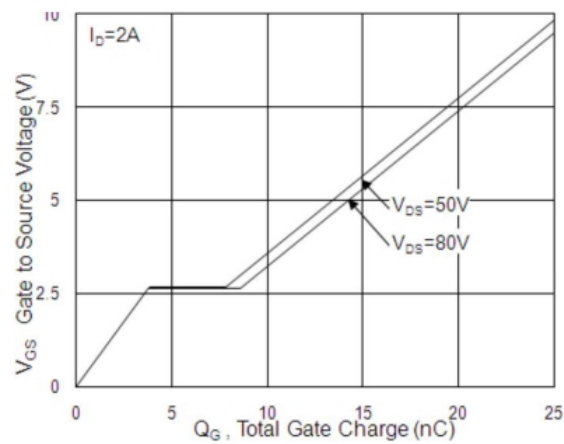
Typical Output Characteristics



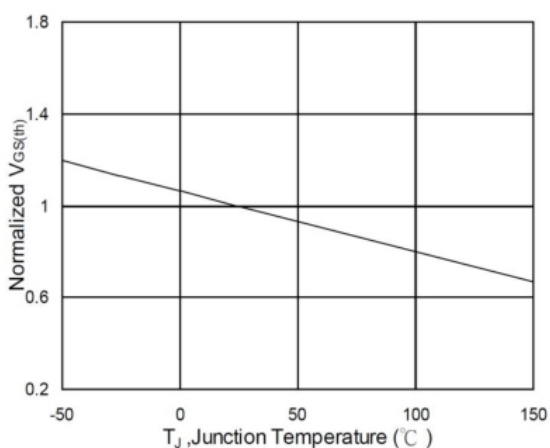
On-Resistance vs. Gate-Source



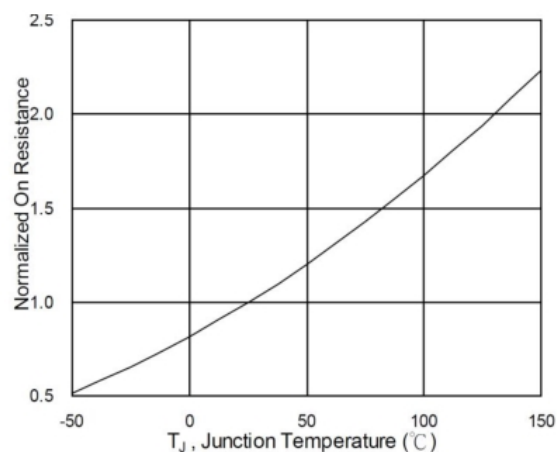
Forward Characteristics Of Reverse



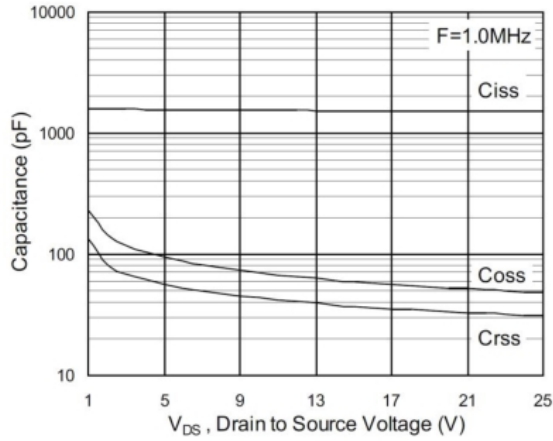
Gate-Charge Characteristics



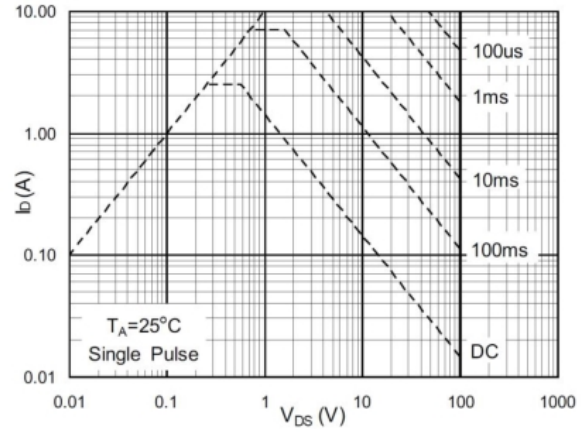
Normalized  $V_{GS(th)}$  vs.  $T_J$



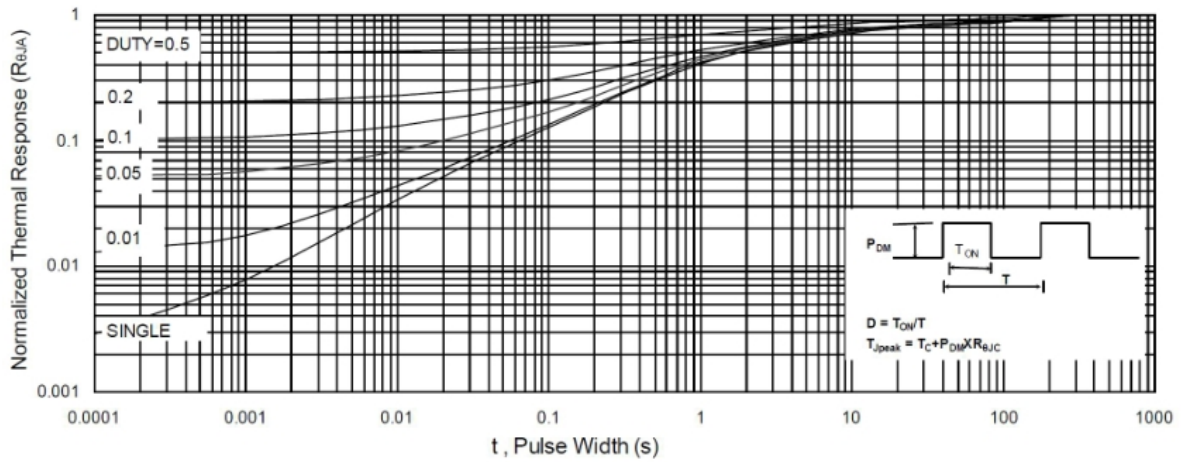
Normalized  $R_{DS(on)}$  vs.  $T_J$



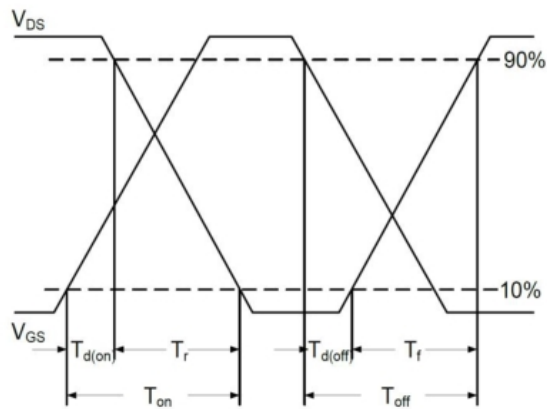
Capacitance



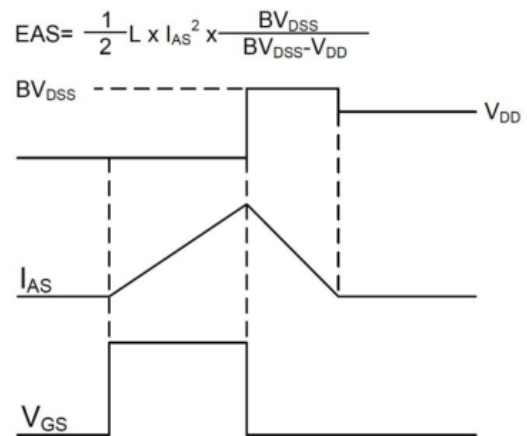
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

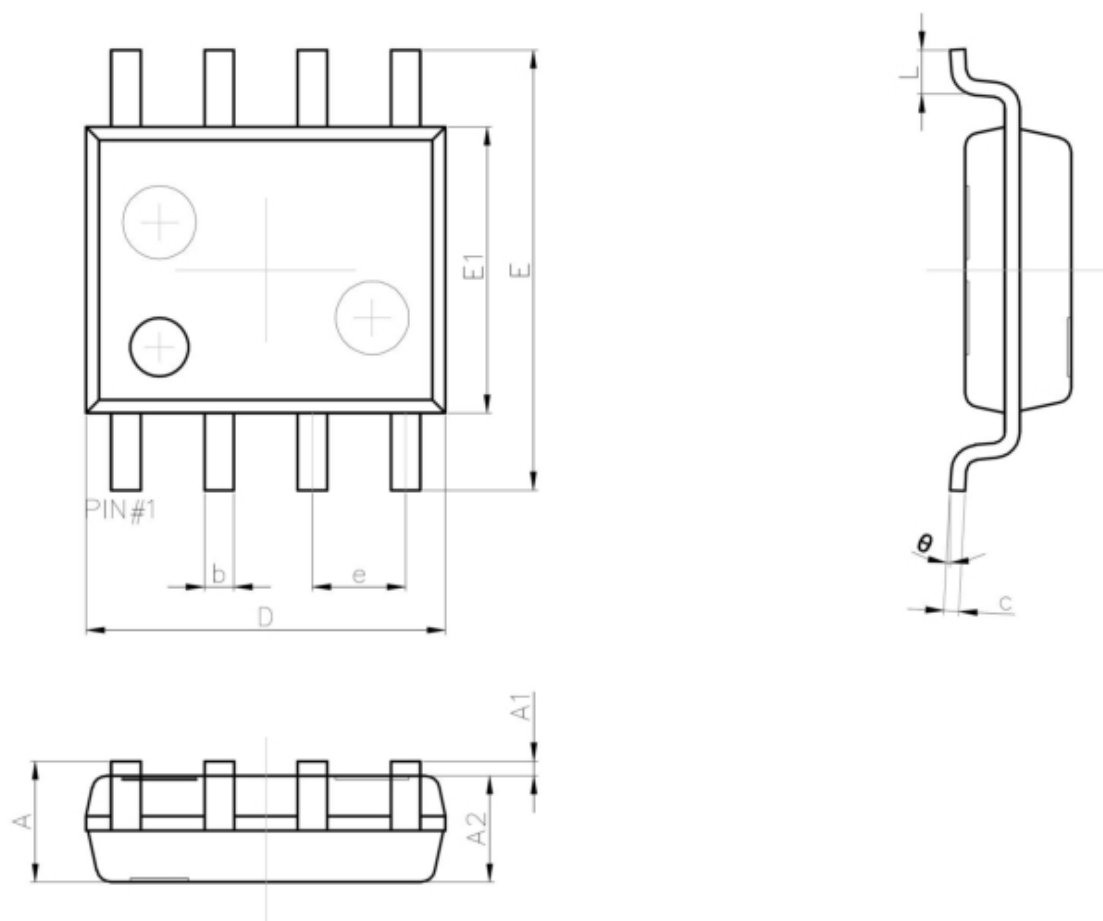


Switching Time Waveform



Unclamped Inductive Switching Waveform

## SOP-8 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
$\theta$	0°	8°