

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
-40V	28mΩ@-10V	-8A
	38mΩ@-4.5V	



**合肥矽普半导体**

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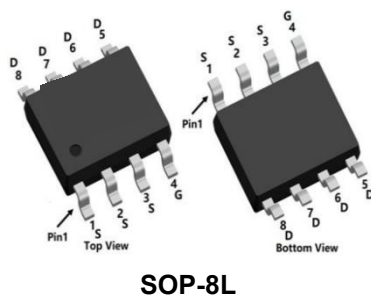
## Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

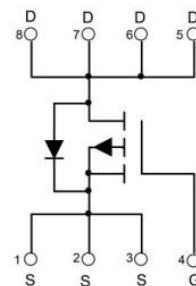
## Applications

- Power Switching Application
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

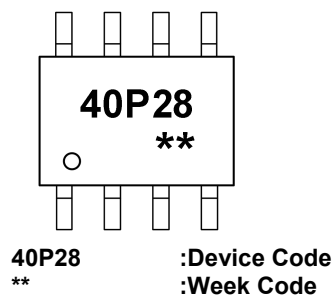
## Package



## Circuit Diagram



## Marking



## Order Information

Device	Package	Unit/Tape
SP40P28P8	SOP-8L	4000

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	-40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-8	A
Pulsed Drain Current	$I_{DM}$	-32	A
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	41	mJ
Power Dissipation	$P_D$	2.5	W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	50	°C/W
Storage Temperature Range	$T_{STG}$	-55 to 150	°C
Operating Junction Temperature Range	$T_J$	-55 to 150	°C

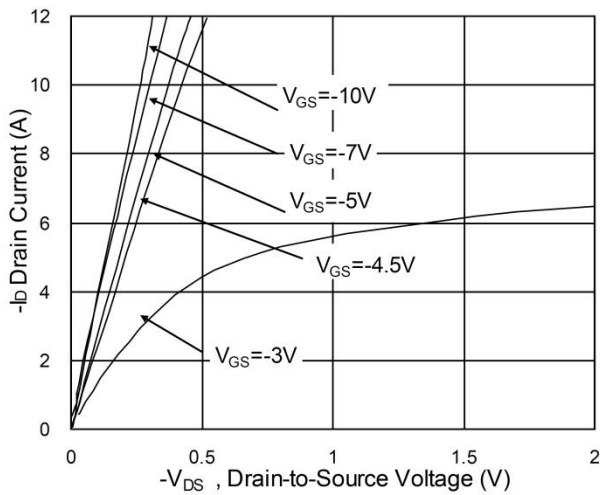
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	VGS=0V , ID=-250uA	-40	-	-	V
Drain-Source Leakage Current	IDSS	VDS=-32V , VGS=0V	-	-	-1	uA
Gate-Source Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =-250uA	-1.2	-1.5	-2.5	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=-10V , ID=-5A	-	28	35	mΩ
		VGS=-4.5V , ID=-4A	-	38	50	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=-15V , VGS=0V , f=1MHz	-	1415	-	pF
Output Capacitance	Coss		-	134	-	
Reverse Transfer Capacitance	Crss		-	102	-	
Total Gate Charge	Qg	VDS=-15V , VGS=-4.5V , ID=-1A	-	11.5	-	nC
Gate-Source Charge	Qgs		-	3.5	-	
Gate-Drain Charge	Qgd		-	3.3	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDD=-15V, VGS=-10V ,RG=3Ω,ID=-1A	-	22	-	nS
Rise Time	Tr		-	15.7	-	
Turn-Off Delay Time	Td(off)		-	59	-	
Fall Time	Tf		-	5.5	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=-1A	-	-	-1.2	V

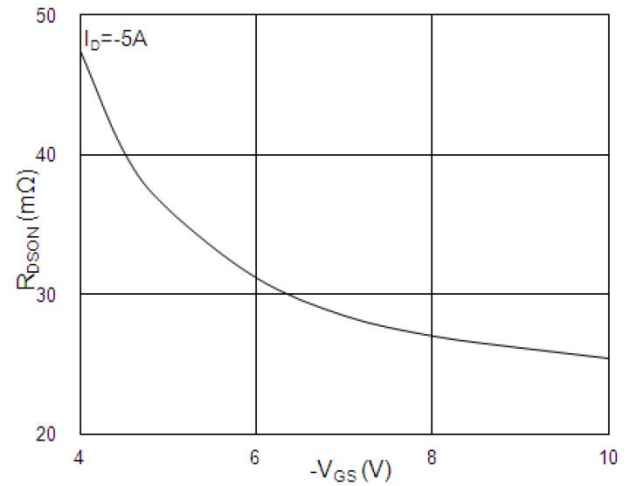
**Note:**

- The EAS test condition is  $V_{DD}=-25V$ ,  $V_G=-10V$ ,  $L=0.5mH$ ,  $R_g=25\Omega$

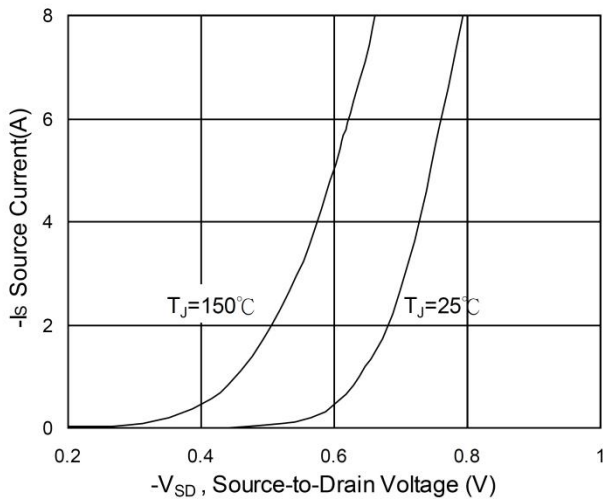
## Typical Characteristics



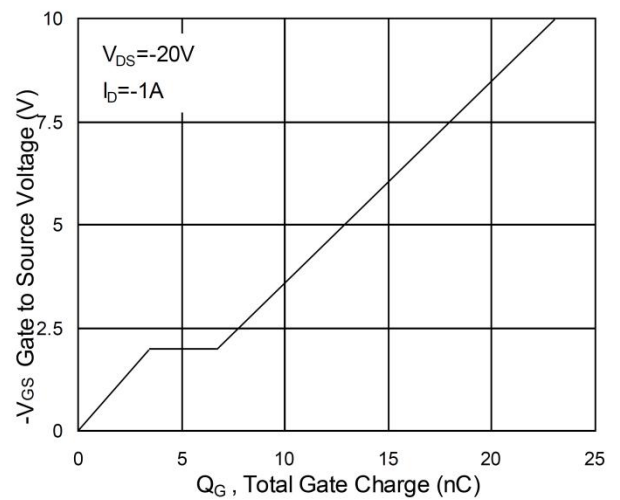
**Fig.1 Typical Output Characteristics**



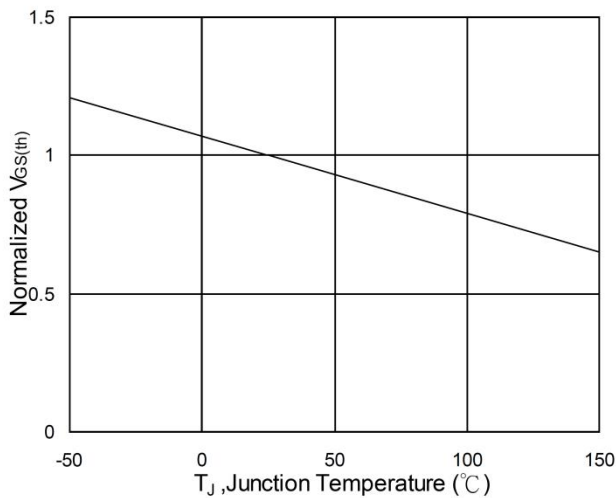
**Fig.2 On-Resistance vs. Gate-Source Voltage**



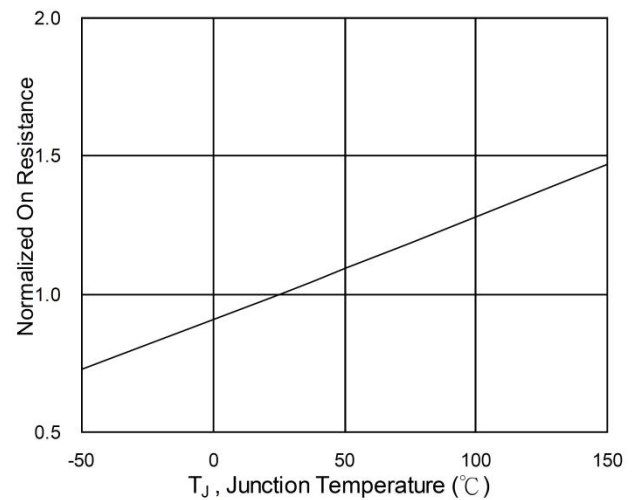
**Fig.3 Forward Characteristics of Reverse**



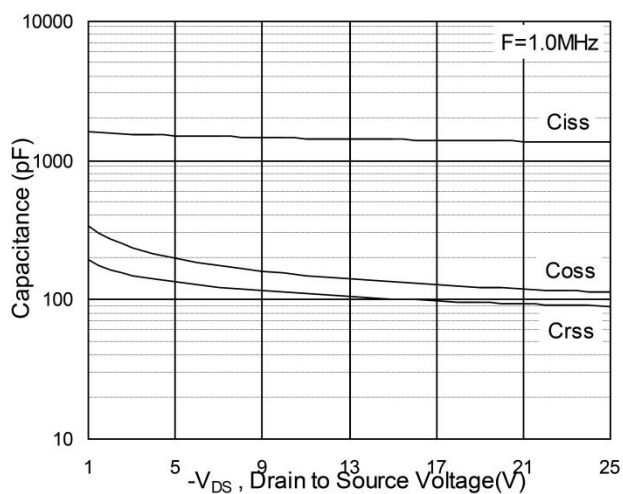
**Fig.4 Gate Charge Characteristics**



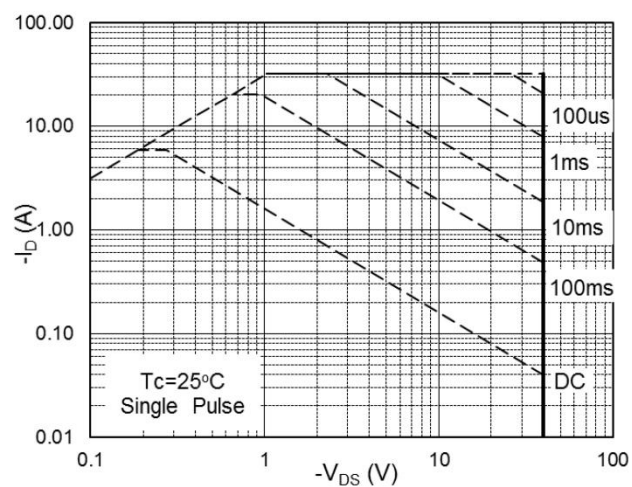
**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**



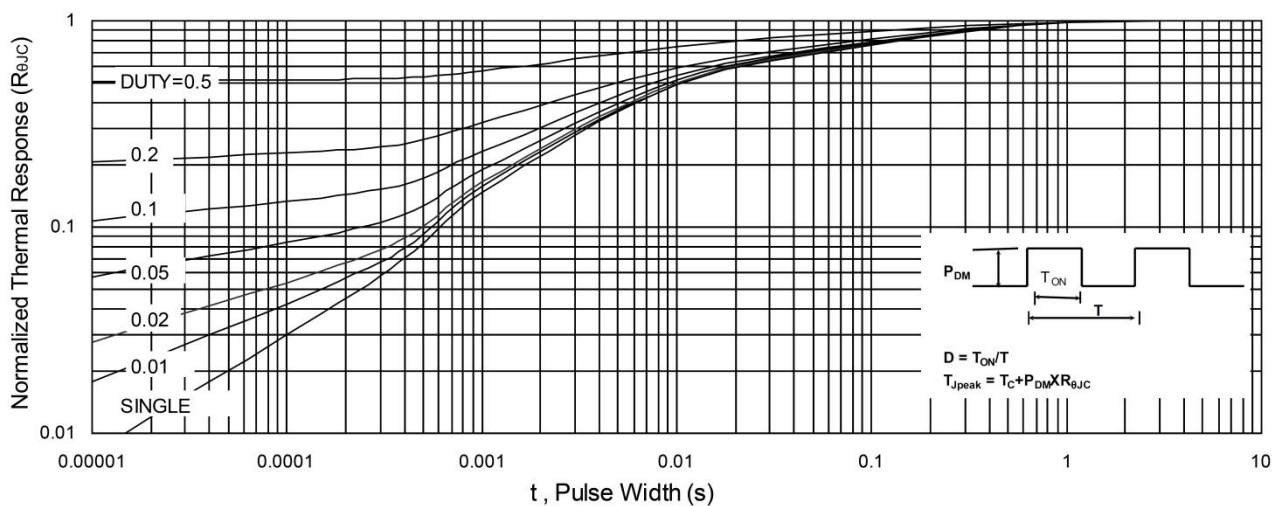
**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**



**Fig.7 Capacitance**

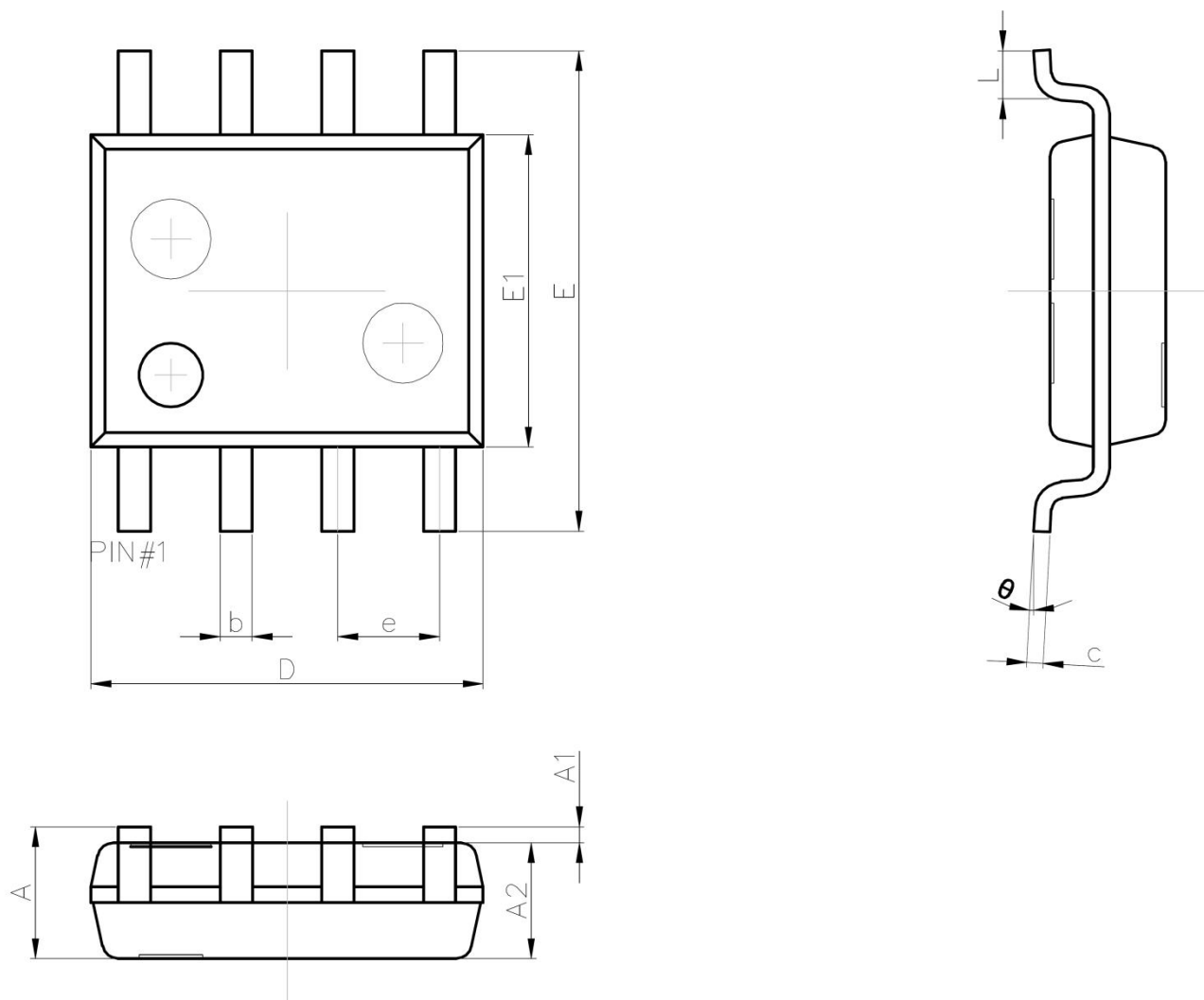


**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**

## SOP-8L 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°