Elektronische Bauelemente

SSD408

18A, 30V, $R_{DS(ON)}$ 18mΩ

N-Channel Enhancement Mode Power Mos.FET

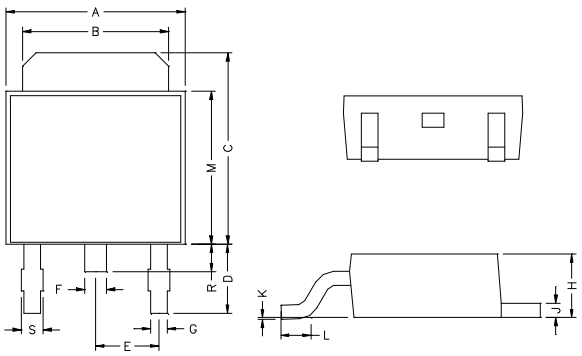
RoHS Compliant Product

Description

The SSD408 uses advanced trench technology to provide excellent on-resistance and low gate charge.

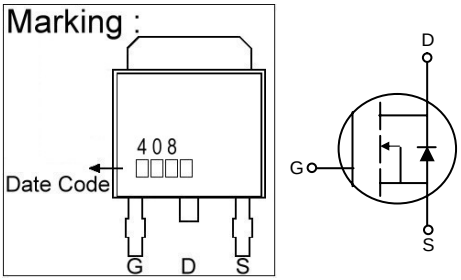
The TO-252 package is universally preferred for all commercial-industrial surface mount applications and suited for use as a load switch or in PWM applications.

TO-252



Features

* Simple Drive Requirement
* Lower On-resistance
* Fast Switching Characteristic



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	0.50	0.70
B	5.20	5.50	H	2.20	2.40
C	6.80	7.20	J	0.45	0.55
D	2.20	2.80	K	0	0.15
E	2.30 REF.		L	0.90	1.50
F	0.70	0.90	M	5.40	5.80
S	0.60	0.90	R	0.80	1.20

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V_{GS}@10V	I_D @Tc=25℃	18	A
Continuous Drain Current, V_{GS}@10V	I_D @Tc=100℃	14	A
Pulsed Drain Current[1]	I_{DM}	70	A
Total Power Dissipation	P_D @Tc=25℃	60	W
Linear Derating Factor		0.4	W/℃
Single Pulse Avalanche Energy[2]	E_{AS}	60	mJ
Single Pulse Avalanche Current	I_{AS}	35	A
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +175	℃

Thermal Data

Parameter		Symbol	Value	Unit
Thermal Resistance Junction-case	Max.	Rthj-c	2.5	℃/W
Thermal Resistance Junction-ambient	Max.	Rthj-a	50	℃/W

Electrical Characteristics (Tj = 25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250uA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	2.5	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance	g_{fs}	-	25	-	S	V_{DS}=5V, I_D=18A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-	I_{DSS}	-	-	1	uA	V_{DS}=30V, V_{GS}=0
Drain-Source Leakage Current(Tj=55℃)		-	-	5	uA	V_{DS}=24V, V_{GS}=0
Static Drain-Source On-Resistance[3]	$R_{DS(ON)}$	-	-	18	mΩ	V_{GS}=10V, I_D=18A
		-	-	27		V_{GS}=4.5V, I_D=10A
Total Gate Charge[3]	Q_g	-	19.8	25	nC	I_D=18A V_{DS}=15V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	2.5	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	3.5	-		
Turn-on Delay Time[3]	$T_{d(on)}$	-	4.5	-	ns	V_{DS}=15V V_{GS}=10V R_G=3Ω R_L=0.82Ω
Rise Time	T_r	-	3.9	-		
Turn-off Delay Time	$T_{d(off)}$	-	17.4	-		
Fall Time	T_f	-	3.2	-		
Input Capacitance	C_{iss}	-	1040	1250	pF	V_{GS}=0V V_{DS}=15V f=1.0MHz
Output Capacitance	C_{oss}	-	180	-		
Reverse Transfer Capacitance	C_{rss}	-	110	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[3]	V_{SD}	-	-	1.0	V	I_S=1A, V_{GS}=0V
Continuous Source Current (Body Diode)	I_S	-	-	18	A	
Reverse Recovery Time[3]	T_{rr}	-	19	-	ns	I_S=18A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	8	-	nC	

Notes: 1. Pulse width limited by safe operating area.

2. Staring Tj=25℃, V_{DD}=25V, L=0.1mH, R_G=25Ω.

3. Pulse width≦300us, duty cycle≦2%.

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Characteristics Curve

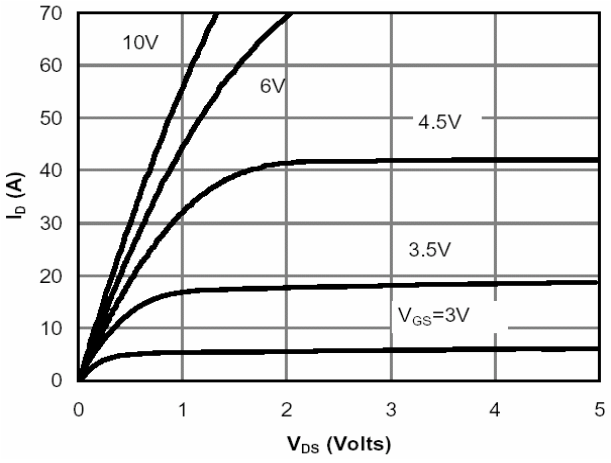

Fig 1. Typical Output Characteristics

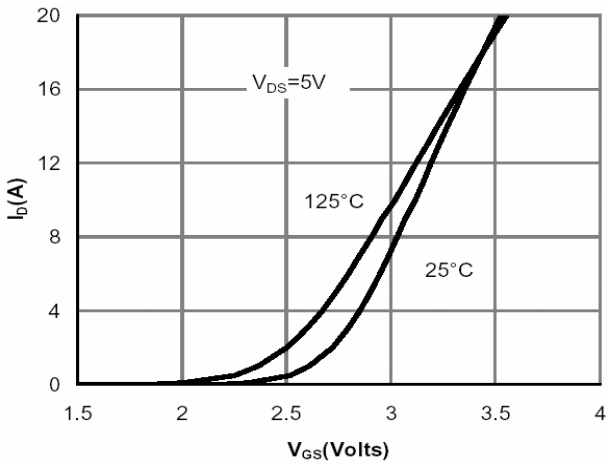

Fig 2. Typical Output Characteristics

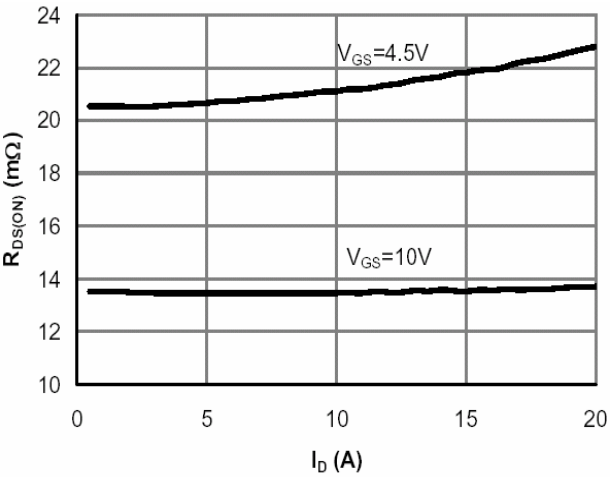

Fig 3. On-Resistance v.s. Gate Voltage

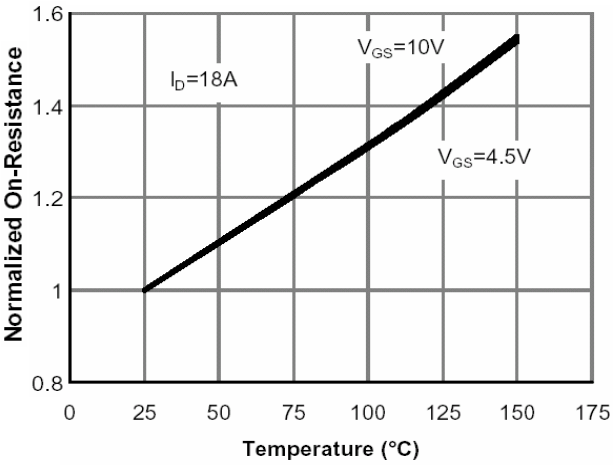

Fig 4. Normalized On-Resistance v.s. Junction Temperature

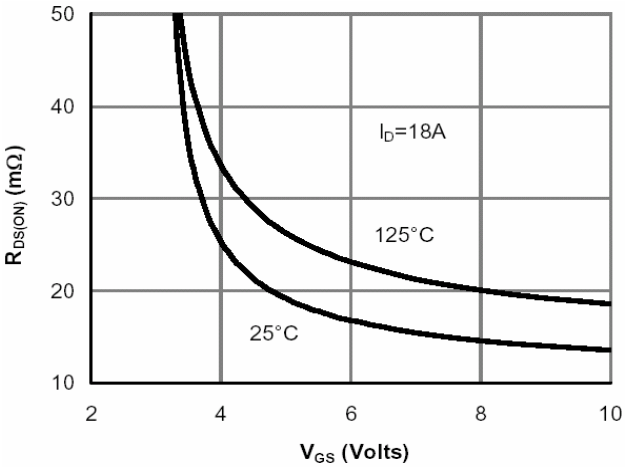

Fig 5. Maximum Drain Current v.s. Case Temperature

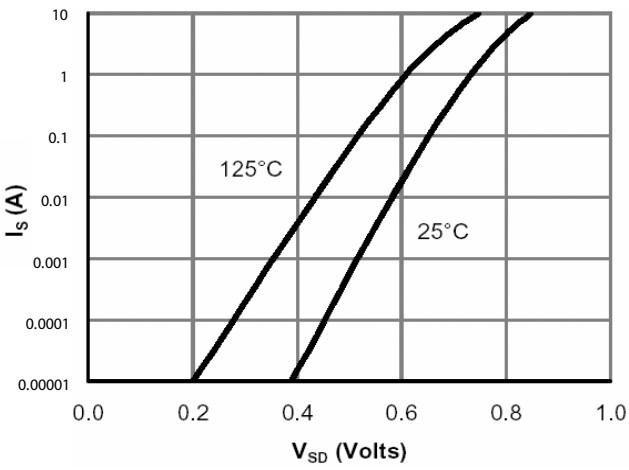

Fig 6. Type Power Dissipation

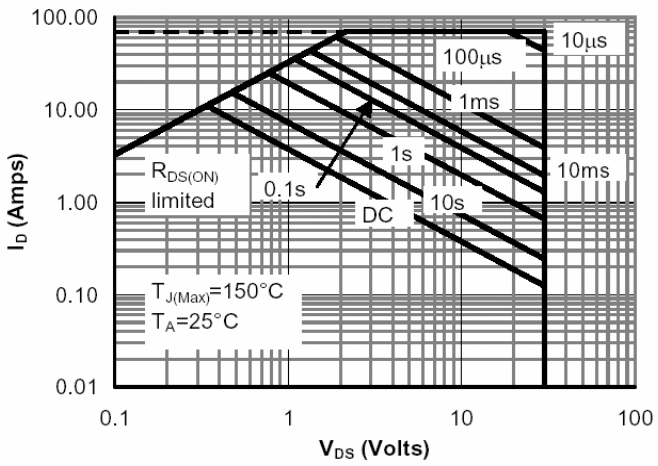

Fig 7. Maximum Safe Operating Area

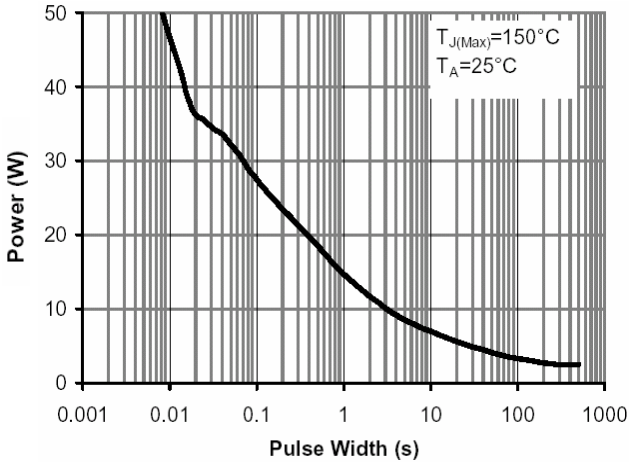

Fig 8. Effective Transient Thermal Impedance

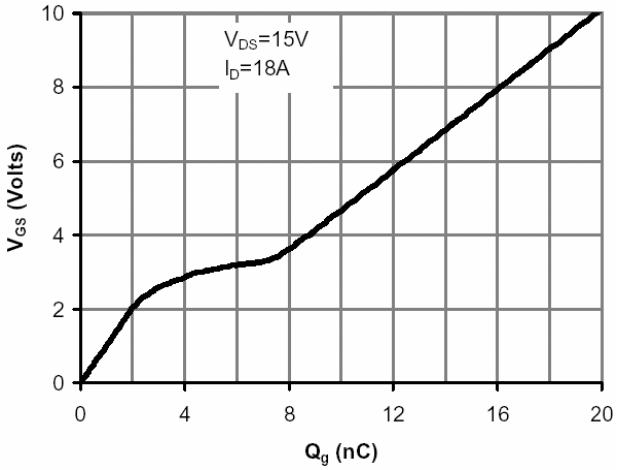

Fig 9. Gate Charge Characteristics

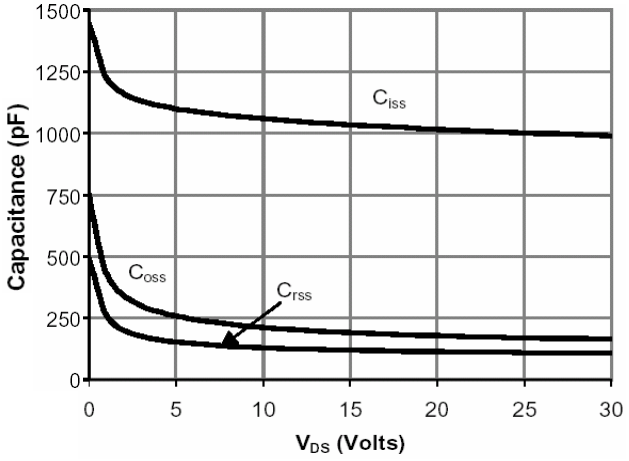

Fig 10. Typical Capacitance Characteristics

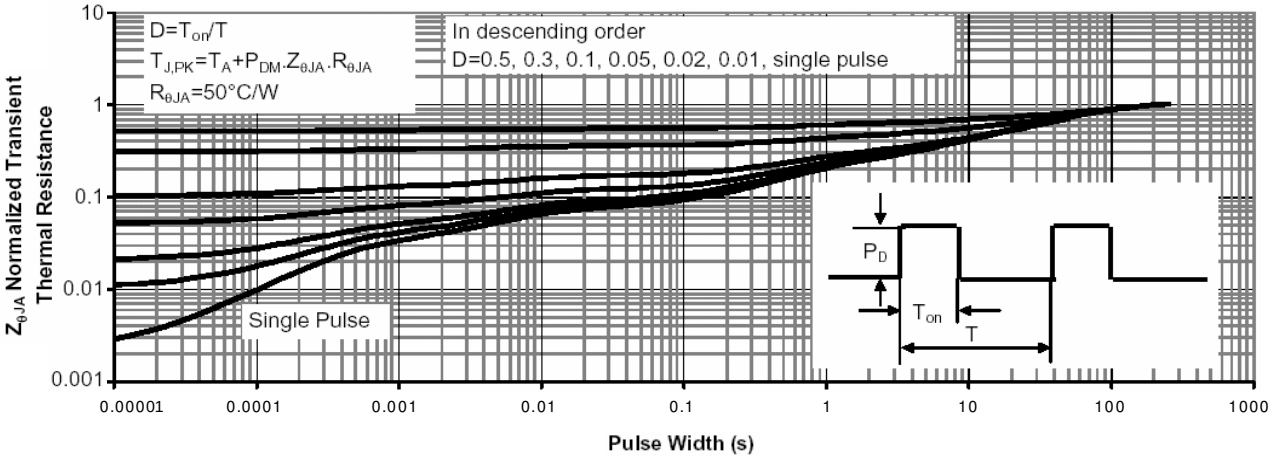

Fig 11. Normalized Maximum Transient Thermal Impedance