

# MOS FET Array STA509A

## Absolute Maximum Ratings (Ta=25°C)

Symbol	Ratings	Unit
V <sub>DSS</sub>	52±5	V
V <sub>GS</sub>	±20	V
I <sub>D</sub>	±3	A
I <sub>D</sub> (pulse) <sup>*1</sup>	±6	A
P <sub>T</sub>	4 (Ta = 25°C)	W
	20 (Tc = 25°C)	W
E <sub>AS</sub> <sup>*2</sup>	40	mJ
T <sub>ch</sub>	150	°C
T <sub>stg</sub>	-55 to +150	°C

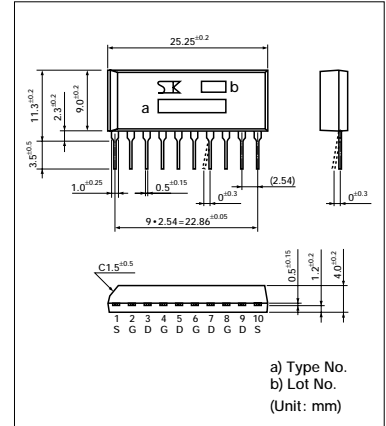
\*1 P<sub>W</sub> ≤ 100μs, duty ≤ 1%

\*2 V<sub>DD</sub> = 12V, L = 10mH, unclamped, R<sub>G</sub> = 10Ω

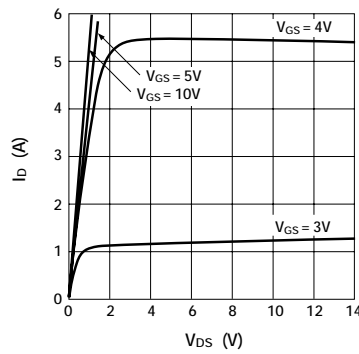
## Electrical Characteristics (Ta=25°C)

Symbol	Test Conditions	Ratings			Unit
		min	typ	max	
V <sub>(BR)DSS</sub>	I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0V	47	52	57	V
I <sub>GSS</sub>	V <sub>GS</sub> = ±20V			±1.0	μA
I <sub>DSS</sub>	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V			100	μA
V <sub>TH</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 250μA	1.0		2.5	V
Re (yfs)	V <sub>DS</sub> = 10V, I <sub>D</sub> = 1.0A	1.0			S
R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 1.0A		0.2	0.25	Ω
	V <sub>GS</sub> = 4V, I <sub>D</sub> = 1.0A		0.25	0.3	Ω
C <sub>iss</sub>	V <sub>DS</sub> = 10V		200		pF
C <sub>oss</sub>	f = 1.0MHz		120		pF
C <sub>rss</sub>	V <sub>GS</sub> = 0V		20		pF
t <sub>d(on)</sub>	I <sub>D</sub> = 1A V <sub>DD</sub> = 12V		2.0		μs
t <sub>r</sub>	R <sub>L</sub> = 12Ω V <sub>GS</sub> = 5V		7.4		μs
t <sub>d(off)</sub>			3.3		μs
t <sub>f</sub>	R <sub>G1</sub> = 50Ω, R <sub>G2</sub> = 10Ω		4.2		μs
V <sub>SD</sub>	I <sub>SD</sub> = 6A, V <sub>GS</sub> = 0V	1.0	1.5		V

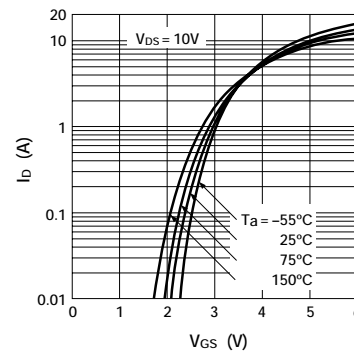
## External Dimensions STA



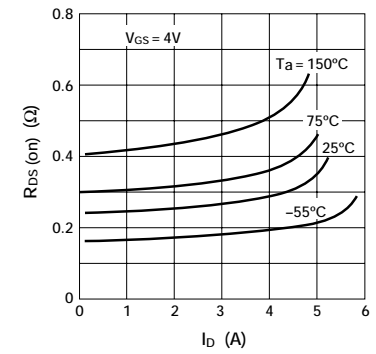
### I<sub>D</sub> — V<sub>DS</sub> Characteristics



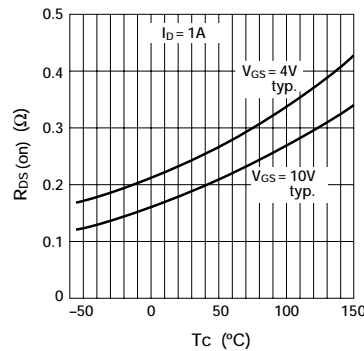
### I<sub>D</sub> — V<sub>GS</sub> Characteristics



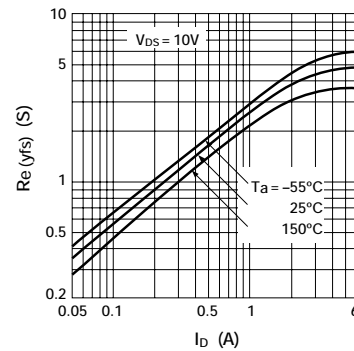
### R<sub>DS(on)</sub> — I<sub>D</sub> Characteristics



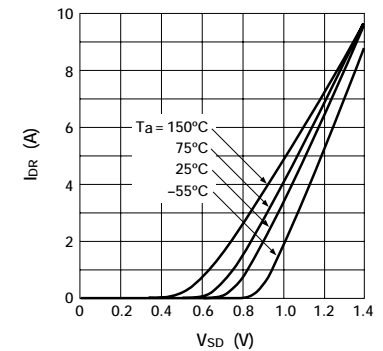
### R<sub>DS(on)</sub> — T<sub>c</sub> Characteristics



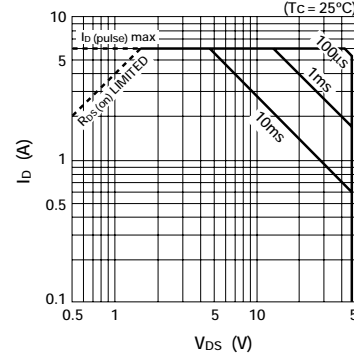
### Re (yfs) — I<sub>D</sub> Characteristics



### I<sub>DR</sub> — V<sub>SD</sub> Characteristics



### Safe Operating Area (single pulse)



### Equivalent Circuit Diagram

