

# 2SK3199

External dimensions 1 ..... FM20

## Absolute Maximum Ratings (Ta = 25°C)

Symbol	Ratings	Unit
V <sub>DSS</sub>	500	V
V <sub>GSS</sub>	±30	V
I <sub>D</sub>	±5	A
I <sub>D</sub> (pulse) *1	±20	A
P <sub>D</sub>	30 (T <sub>c</sub> = 25°C)	W
E <sub>AS</sub> *2	35	mJ
I <sub>AS</sub>	5	A
T <sub>ch</sub>	150	°C
T <sub>stg</sub>	-55 to +150	°C

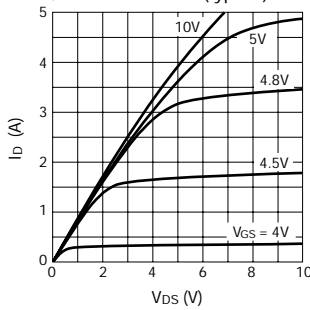
\* 1: P<sub>w</sub> ≤ 100μs, duty cycle ≤ 1%

\* 2: V<sub>DD</sub> = 30V, L = 2.6mH, I<sub>L</sub> = 5A, unclamped, R<sub>G</sub> = 50Ω, See Figure 1 on Page 5.

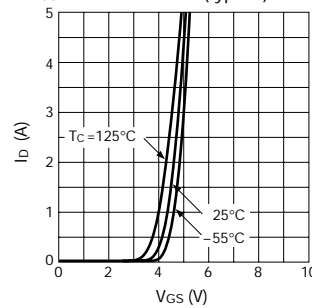
## Electrical Characteristics (Ta = 25°C)

Symbol	Ratings			Unit	Conditions
	min	typ	max		
V <sub>(BR)DSS</sub>	500			V	I <sub>D</sub> = 100μA, V <sub>GS</sub> = 0V
I <sub>GSS</sub>			±100	nA	V <sub>GS</sub> = ±30V
I <sub>DSS</sub>			100	μA	V <sub>DS</sub> = 500V, V <sub>GS</sub> = 0V
V <sub>TH</sub>	2.0	3.0	4.0	V	V <sub>DS</sub> = 10V, I <sub>D</sub> = 1mA
Re(yfs)	3.5	5.2		S	V <sub>DS</sub> = 20V, I <sub>D</sub> = 2.5A
R <sub>DS(on)</sub>		1.2	1.5	Ω	V <sub>GS</sub> = 10V, I <sub>D</sub> = 2.5A
C <sub>iss</sub>		650		pF	V <sub>DS</sub> = 10V, f = 1.0MHz, V <sub>GS</sub> = 0V
C <sub>oss</sub>		250		pF	
C <sub>rss</sub>		110		pF	
t <sub>d(on)</sub>		18		ns	I <sub>D</sub> = 2.5A, V <sub>DD</sub> ≐ 250V, R <sub>L</sub> = 100Ω, V <sub>GS</sub> = 10V, See Figure 2 on Page 5.
t <sub>r</sub>		30		ns	
t <sub>d(off)</sub>		60		ns	
t <sub>f</sub>		65		ns	
V <sub>SD</sub>		0.9	1.5	V	I <sub>SD</sub> = 5A, V <sub>GS</sub> = 0V
t <sub>rr</sub>		2		μs	I <sub>SD</sub> = ±100mA, V <sub>GS</sub> = 0V

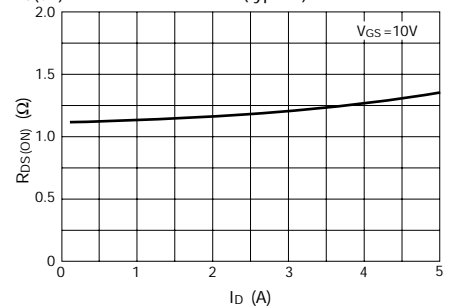
I<sub>D</sub> - V<sub>DS</sub> Characteristics (typical)



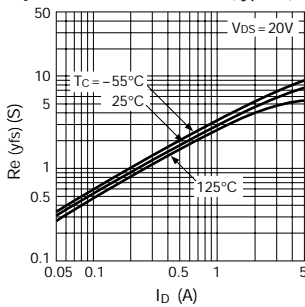
I<sub>D</sub> - V<sub>GS</sub> Characteristics (typical)



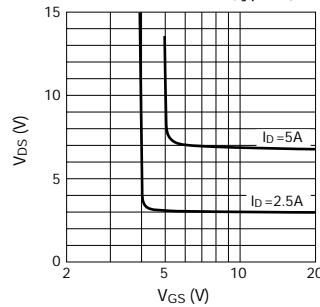
R<sub>DS(on)</sub> - I<sub>D</sub> Characteristics (typical)



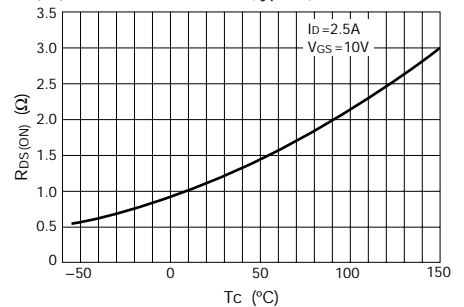
Re(yfs) - I<sub>D</sub> Characteristics (typical)



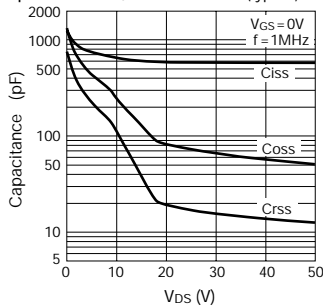
V<sub>DS</sub> - V<sub>GS</sub> Characteristics (typical)



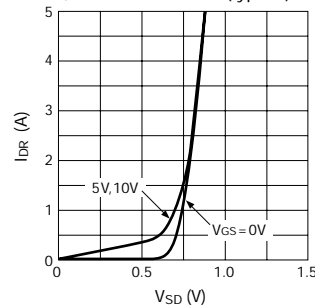
R<sub>DS(on)</sub> - T<sub>c</sub> Characteristics (typical)



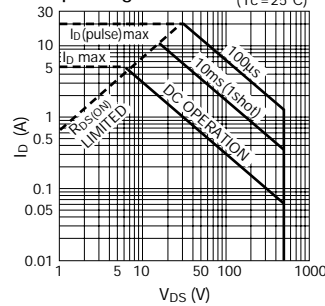
Capacitance - V<sub>DS</sub> Characteristics (typical)



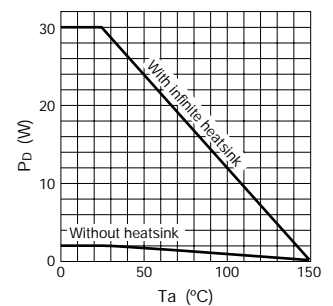
I<sub>DR</sub> - V<sub>SD</sub> Characteristics (typical)



Safe Operating Area (Tc = 25°C)



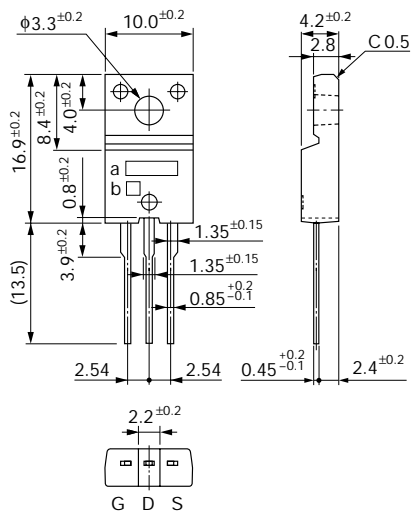
P<sub>D</sub> - T<sub>a</sub> Characteristics



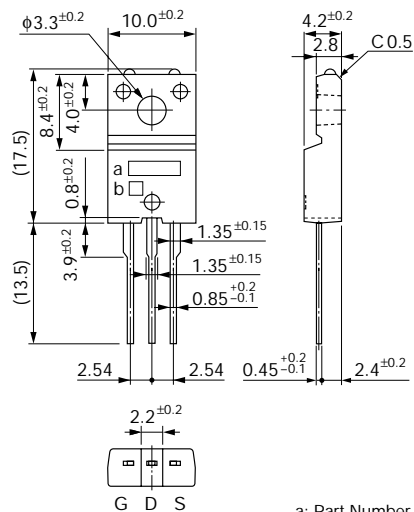
# External dimensions (Unit: mm)

## ① FM20 (TO-220F)

General product



UL approved product

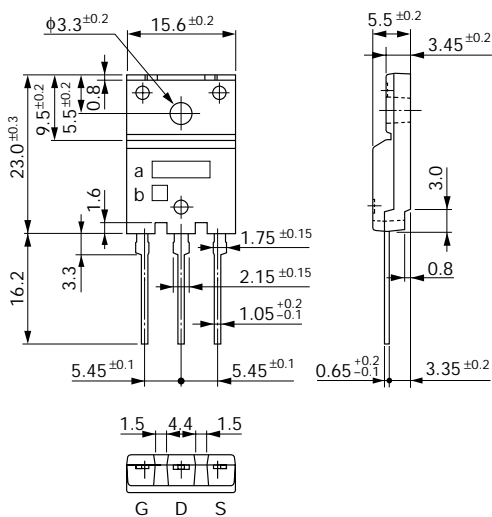


a: Part Number  
b: Lot Number

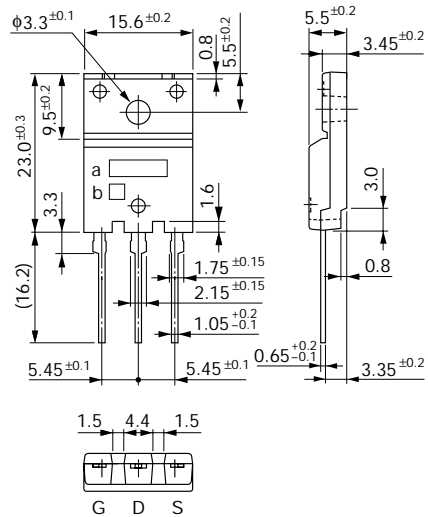
Weight: Approx 2.0g

## ② FM100 (TO-3PF)

General product



UL approved product



a: Part Number  
b: Lot Number

Weight: Approx 6.5g