

# 2SK3665

## N-channel enhancement mode MOSFET

High speed switching

### Absolute Maximum Ratings

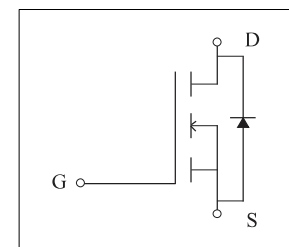
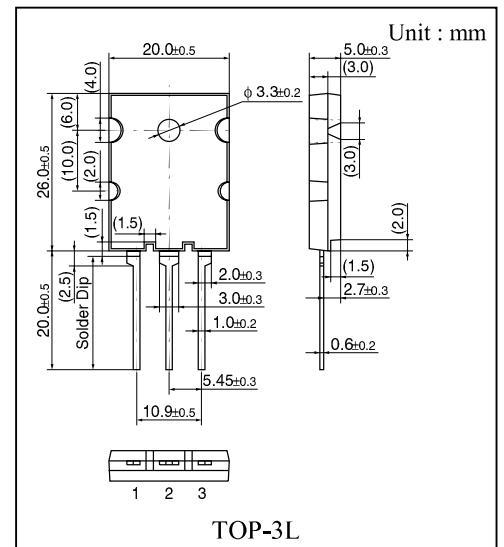
Parameter	Symbol	Rating	Unit
Drain-Source breakdown voltage	V <sub>DSS</sub>	200	V
Gate-Source voltage	V <sub>GSS</sub>	±30	V
Drain current	DC	I <sub>D</sub>	30 A
	Pulse	I <sub>DP</sub>	120 A
Avalanche energy capability *1	EAS	1800	mJ
Allowable power dissipation	T <sub>c</sub> = 25 °C *2	P <sub>D</sub>	180 W
	T <sub>a</sub> = 25 °C *3	P <sub>D</sub>	3 W
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*1 : Guarantee of single pulse avalanche energy.

(L = 2mH, I<sub>L</sub> = 30A, V<sub>DD</sub> = 100V, 1pulse, T<sub>a</sub> = 25 °C)\*2 : T<sub>c</sub> = 25 °C\*3 : T<sub>a</sub> = 25 °C (Without heat sink)

### Electrical Characteristics (T<sub>c</sub> = 25 ± 3 °C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain Cutoff Current	I <sub>DSS</sub>	V <sub>DS</sub> = 160V, V <sub>GS</sub> = 0	—	—	100	μA
Gate-source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±30 V, V <sub>DS</sub> = 0	—	—	±1	μA
Drain-source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> = 1 mA, V <sub>GS</sub> = 0	200	—	—	V
Gate Threshold Voltage	V <sub>th</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 1 mA	1.5	—	3.5	V
Drain-source on Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A	—	50	68	mΩ
Forward Transfer Admittance	Y <sub>fs</sub>	V <sub>DS</sub> = 25 V, I <sub>D</sub> = 15 A	8	16	—	S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 0, f = 1MHz	—	3170	—	pF
Output Capacitance	C <sub>oss</sub>		—	440	—	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		—	35	—	pF
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = 100V, I <sub>D</sub> = 15 A R <sub>L</sub> = 6.7 Ω, V <sub>GS</sub> = 10 V	—	36	—	ns
Rise time	t <sub>r</sub>		—	42	—	ns
Turn-off delay time	t <sub>d(off)</sub>		—	230	—	ns
Fall time	t <sub>f</sub>		—	50	—	ns



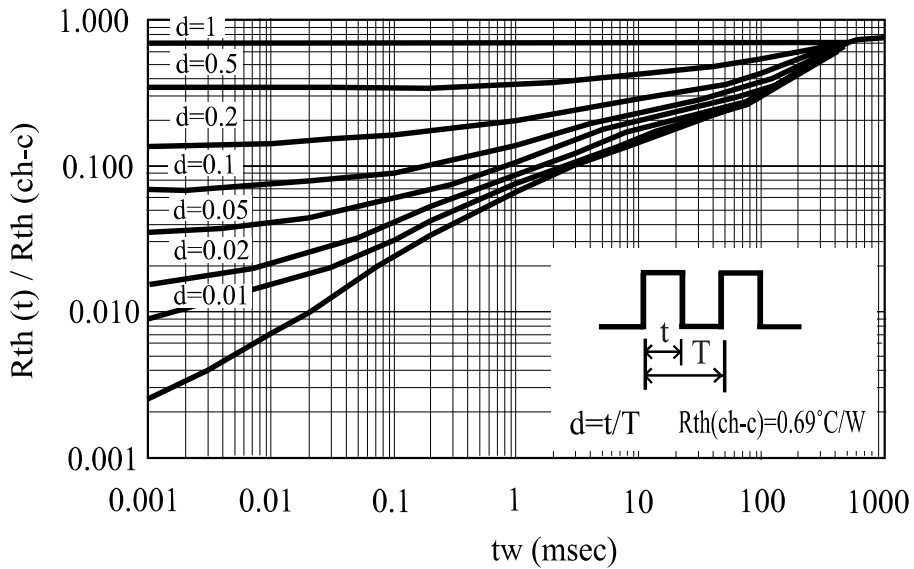
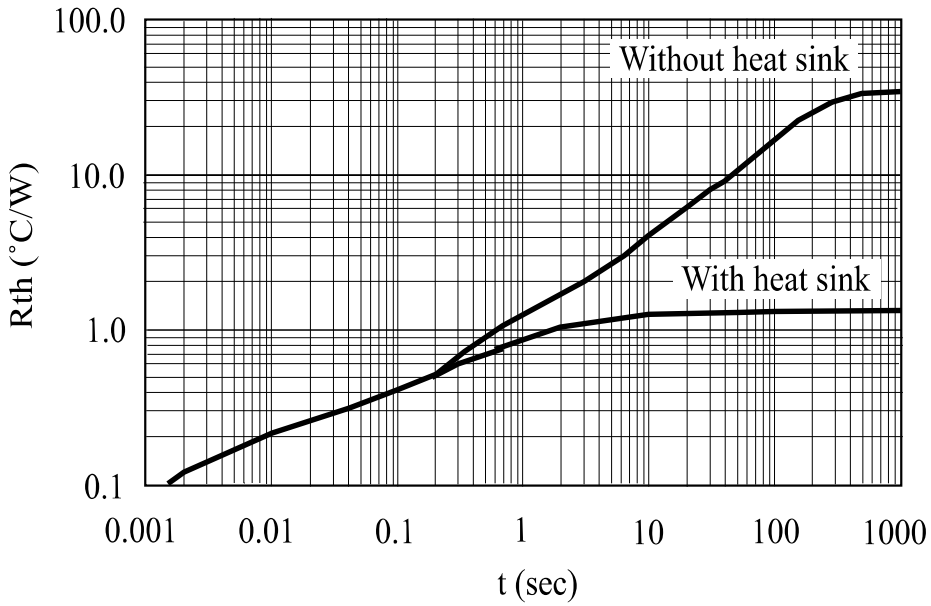
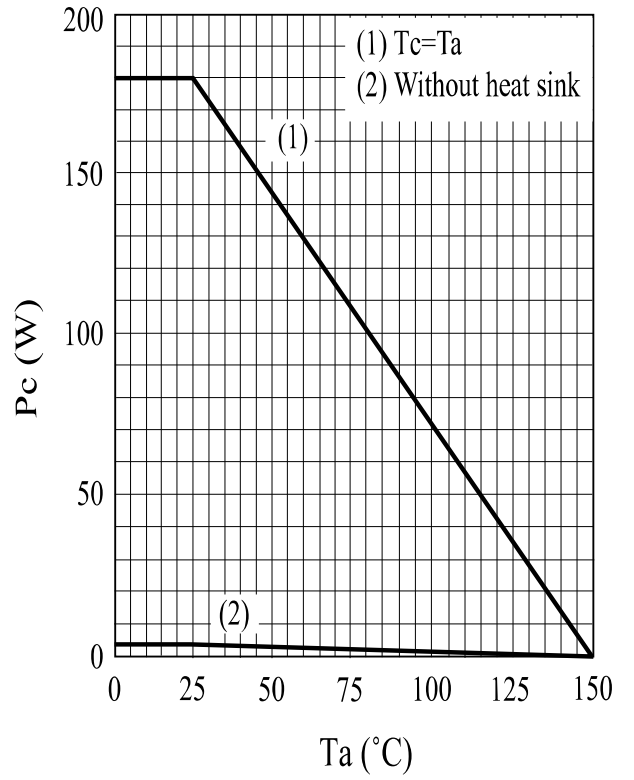
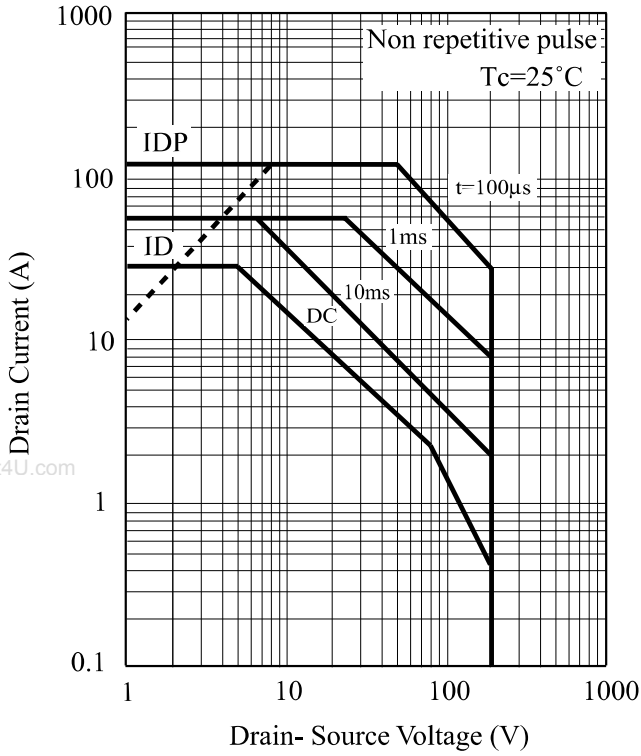
## ■ Electrical Characteristics (Tc = 25 ± 3 °C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Diode forward Voltage	V <sub>DSF</sub>	I <sub>DR</sub> = 30V, V <sub>GS</sub> = 0	–	–	-1.5	V
Reverse recovery Time	T <sub>rr</sub>	L = 230 μH, V <sub>DD</sub> = 100V	–	182	–	n s
Reverse recovery Charge	Q <sub>rr</sub>	I <sub>DR</sub> = 15 A, di/dt = 100A/μs	–	819	–	n C
Total Gate Charge	Q <sub>g</sub>	V <sub>DD</sub> = 100 V, I <sub>D</sub> = 25 A V <sub>GS</sub> = 10 V	–	55	–	n C
Gate-Source Charge	Q <sub>gs</sub>		–	10	–	n C
Gate-Drain Charge	Q <sub>gd</sub>		–	16	–	n C

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## ■ Thermal characteristics

Thermal resistance (channel to case)	R <sub>th (ch-c)</sub>		–	–	0.69	°C/W
Thermal resistance (channel to ambient)	R <sub>th (ch-a)</sub>		–	–	41.6	°C/W



Derating curve for safety operation

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