

# SHINDENGEN

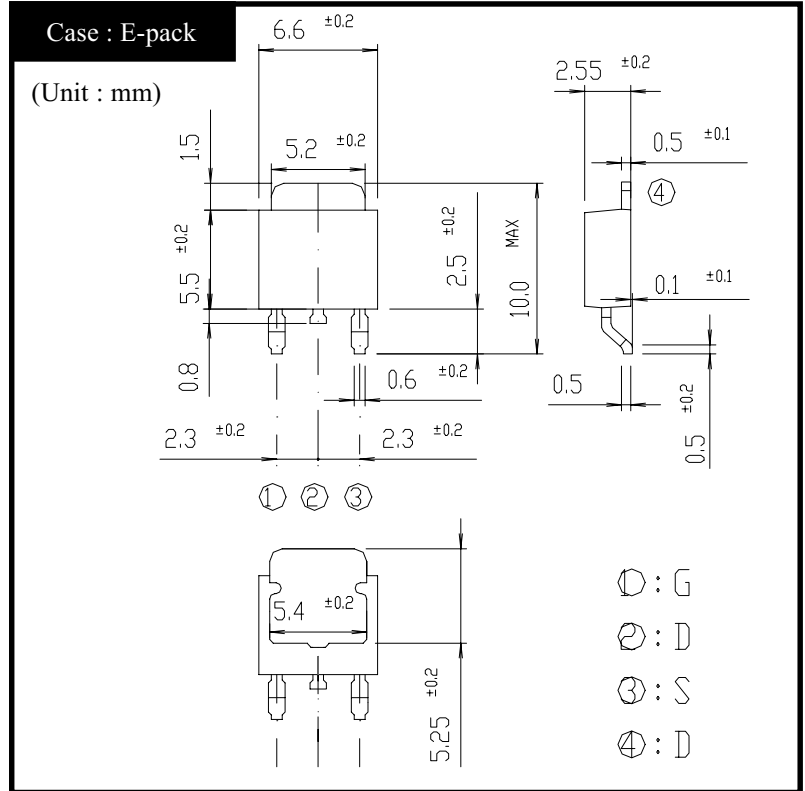
## VR Series Power MOSFET

N-Channel Enhancement type

**2SK1861**  
( F04E15L )

**150V 4A**

### OUTLINE DIMENSIONS



### RATINGS

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

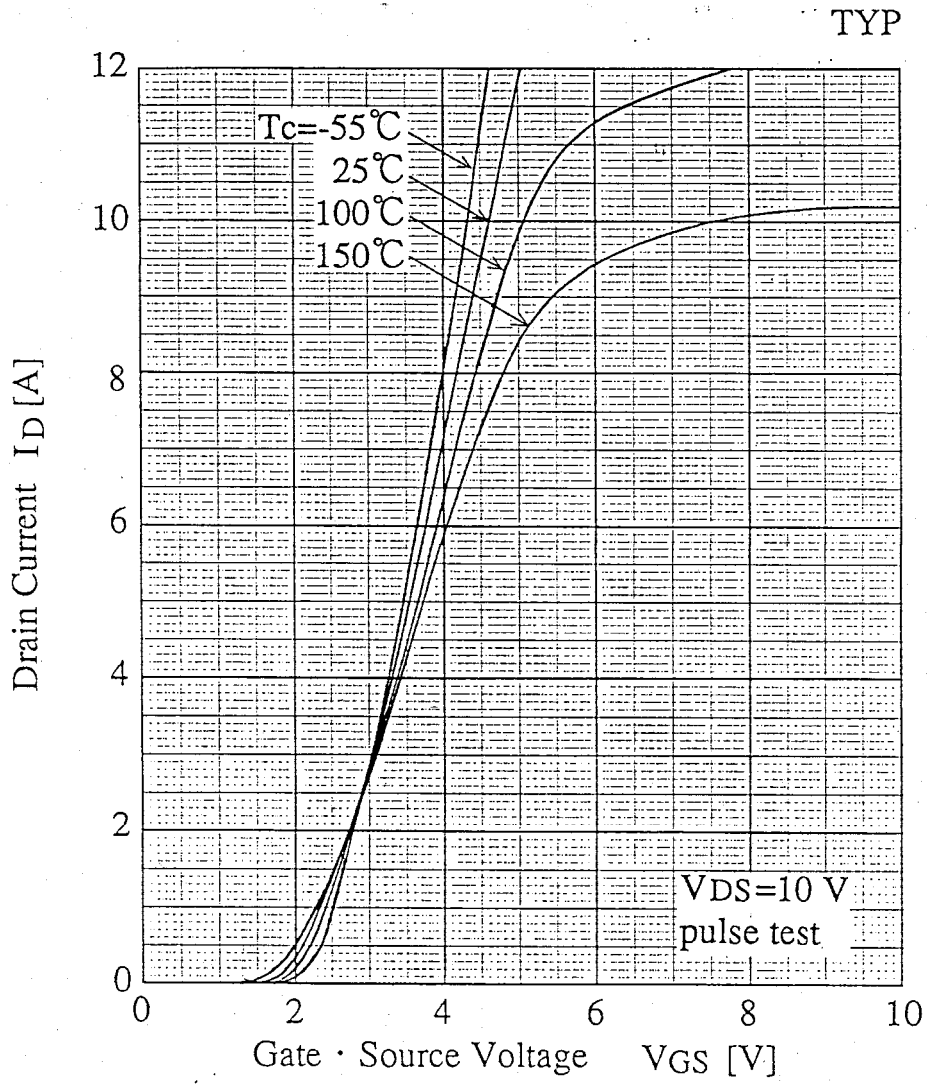
Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	T <sub>stg</sub>		-55 to 150	°C
Channel Temperature	T <sub>ch</sub>		150	
Drain-Source Voltage	V <sub>DSS</sub>		150	V
Gate-Source Voltage	V <sub>GSS</sub>		±20	
Continuous Drain Current (DC)	I <sub>D</sub>		4	A
Continuous Drain Current (Peak)	I <sub>DP</sub>		12	
Continuous Source Current (DC)	I <sub>S</sub>		4	
Total Power Dissipation	P <sub>T</sub>		10	W

Electrical Characteristics  $T_c = 25^\circ\text{C}$ 

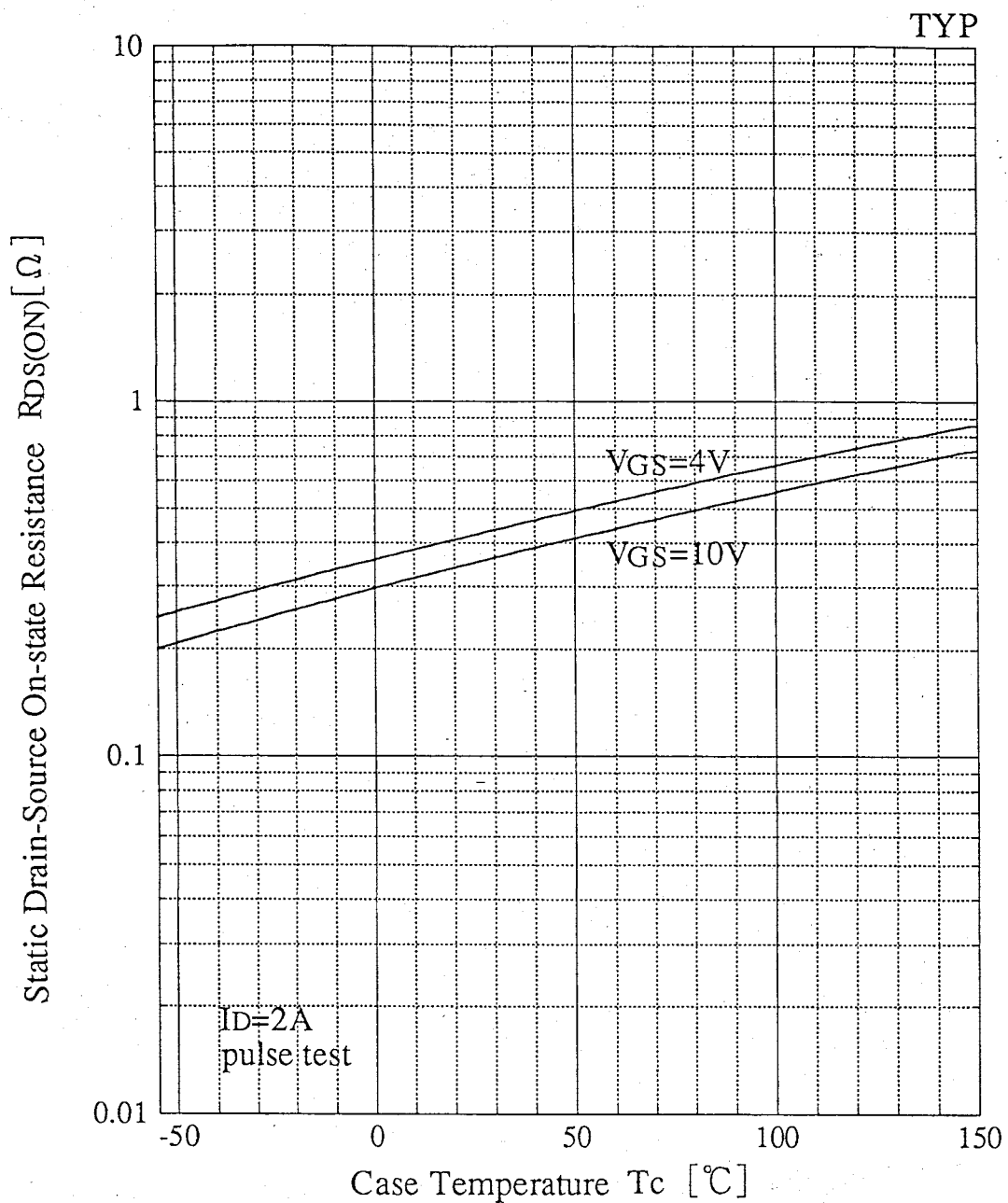
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}, V_{GS} = 0\text{V}$	150			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 150\text{V}, V_{GS} = 0\text{V}$			250	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$			$\pm 10$	
Forward Transconductance	$g_{fs}$	$I_D = 2\text{A}, V_{DS} = 10\text{V}$	1.8	3.6		S
Static Drain-Source On-state Resistance	$R_{DS(ON)}$	$I_D = 2\text{A}, V_{GS} = 4\text{V}$		0.42	0.6	$\Omega$
		$I_D = 2\text{A}, V_{GS} = 10\text{V}$		0.35	0.5	
Gate Threshold Voltage	$V_{TH}$	$I_D = 1\text{mA}, V_{DS} = 10\text{V}$	1.0	1.5	2.0	V
Source-Drain Diode Forward Voltage	$V_{SD}$	$I_S = 4\text{A}, V_{GS} = 0\text{V}$			1.5	
Thermal Resistance	$\theta_{jc}$	junction to case			12.5	$^\circ\text{C/W}$
Total Gate Charge	$Q_g$	$V_{GS} = 10\text{V}, I_D = 4\text{A}, V_{DD} = 100\text{V}$		21		nC
Input Capacitance	$C_{iss}$	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		480		pF
Reverse Transfer Capacitance	$C_{rss}$			50		
Output Capacitance	$C_{oss}$			160		
Turn-On Time	$t_{on}$	$I_D = 2\text{A},$		60	120	ns
Turn-Off Time	$t_{off}$	$R_L = 50\Omega, V_{GS} = 5\text{V}$		120	240	

2SK1861

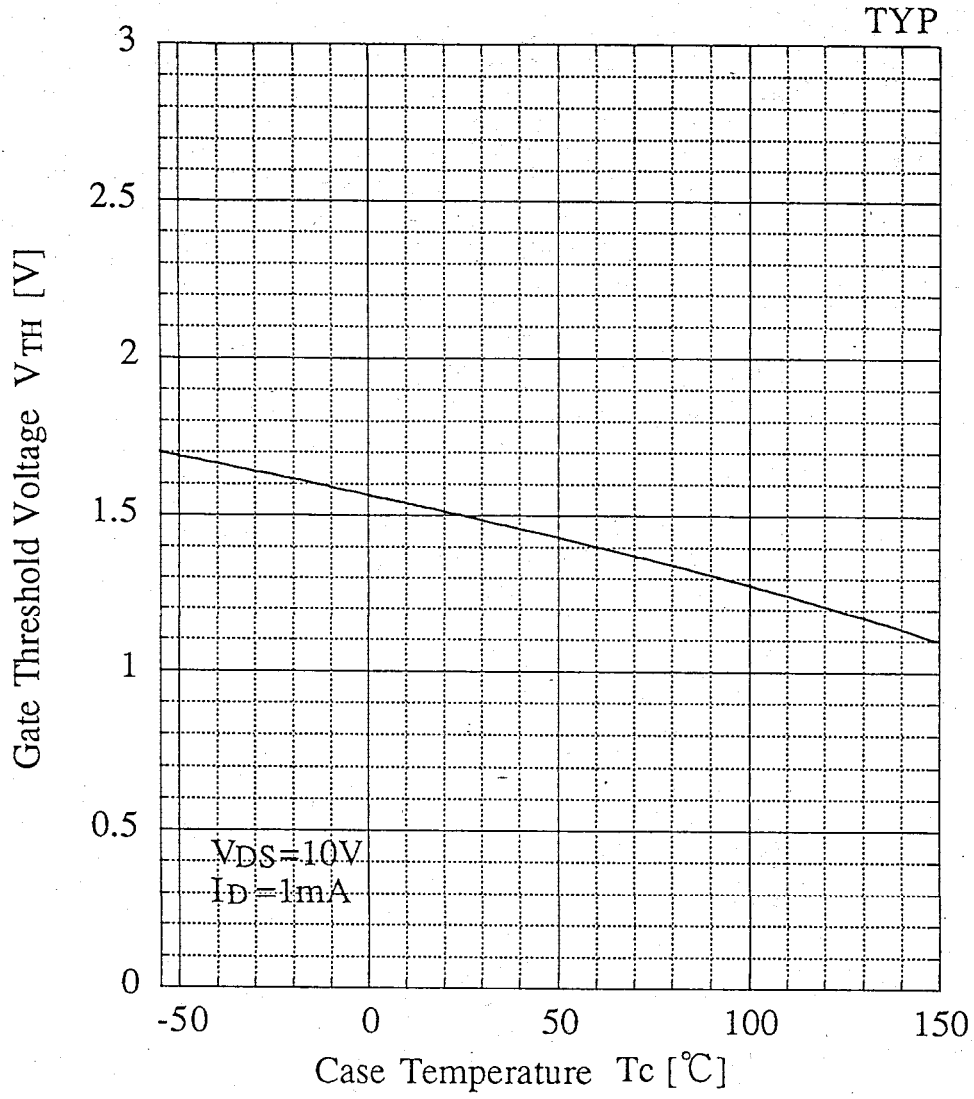
Transfer Characteristics



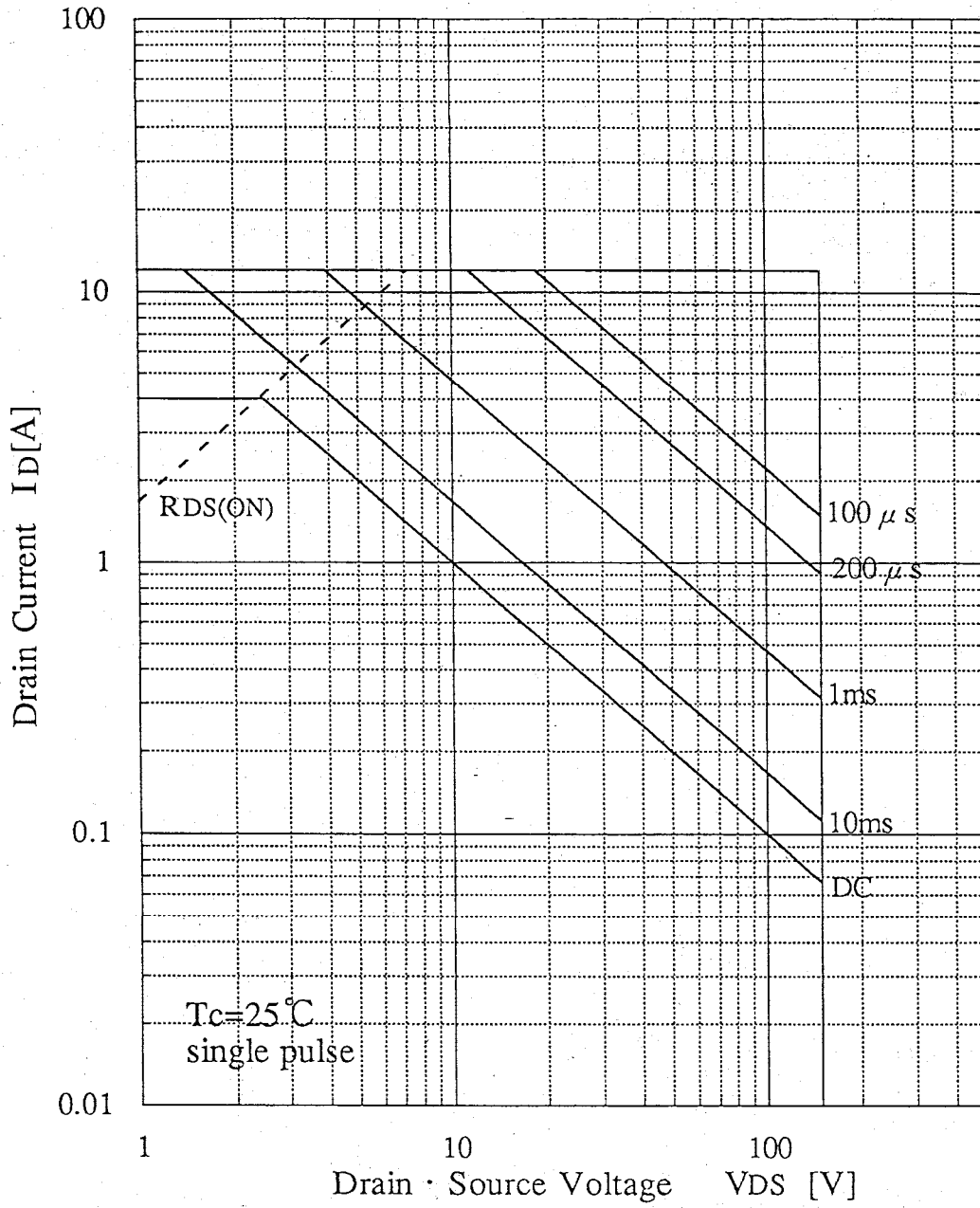
# 2SK1861 Static Drain-Source On-state Resistance



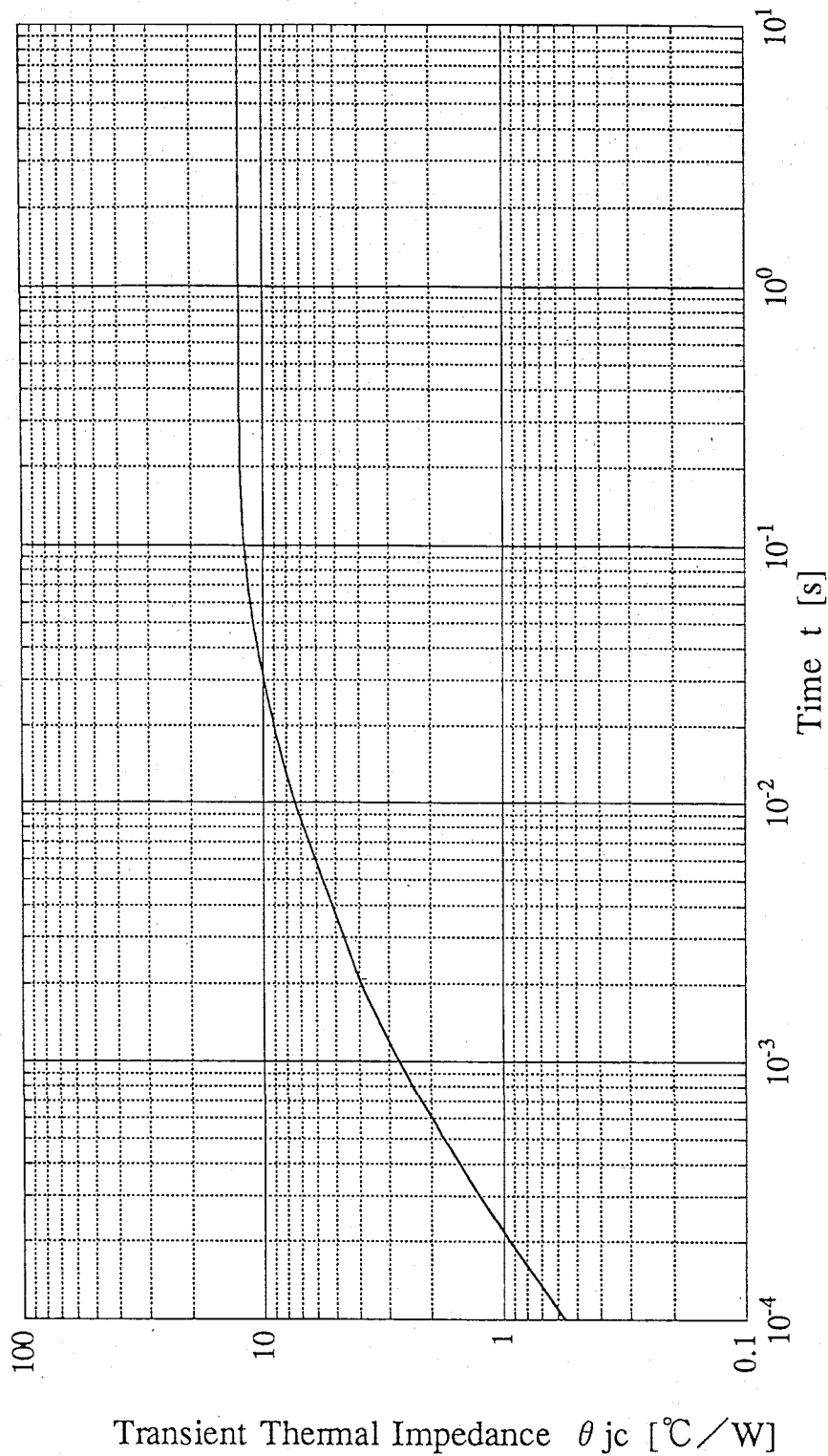
# 2SK1861 Gate Threshold Voltage

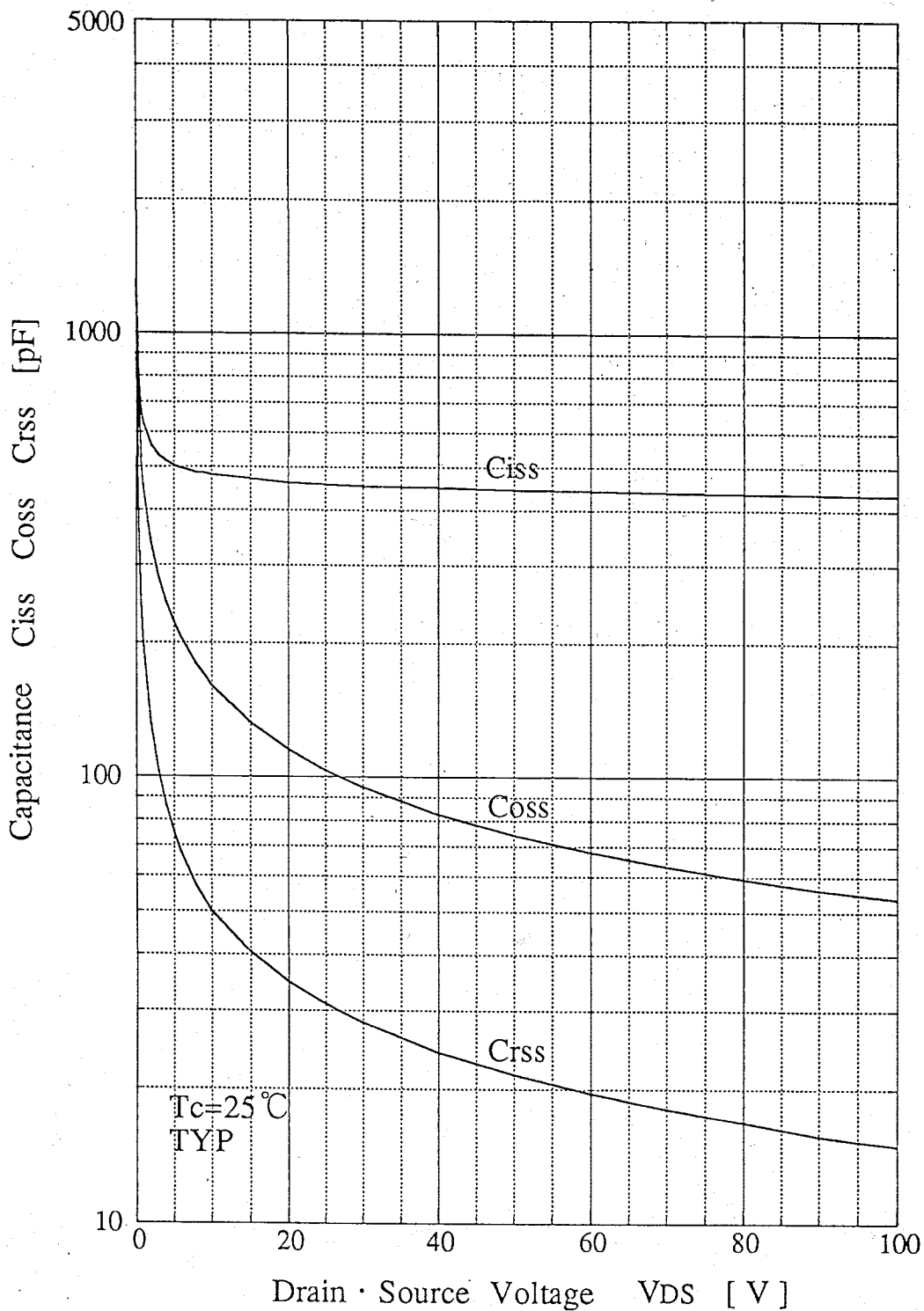


2SK1861 Safe Operating Area



2SK1861 Transient Thermal Impedance

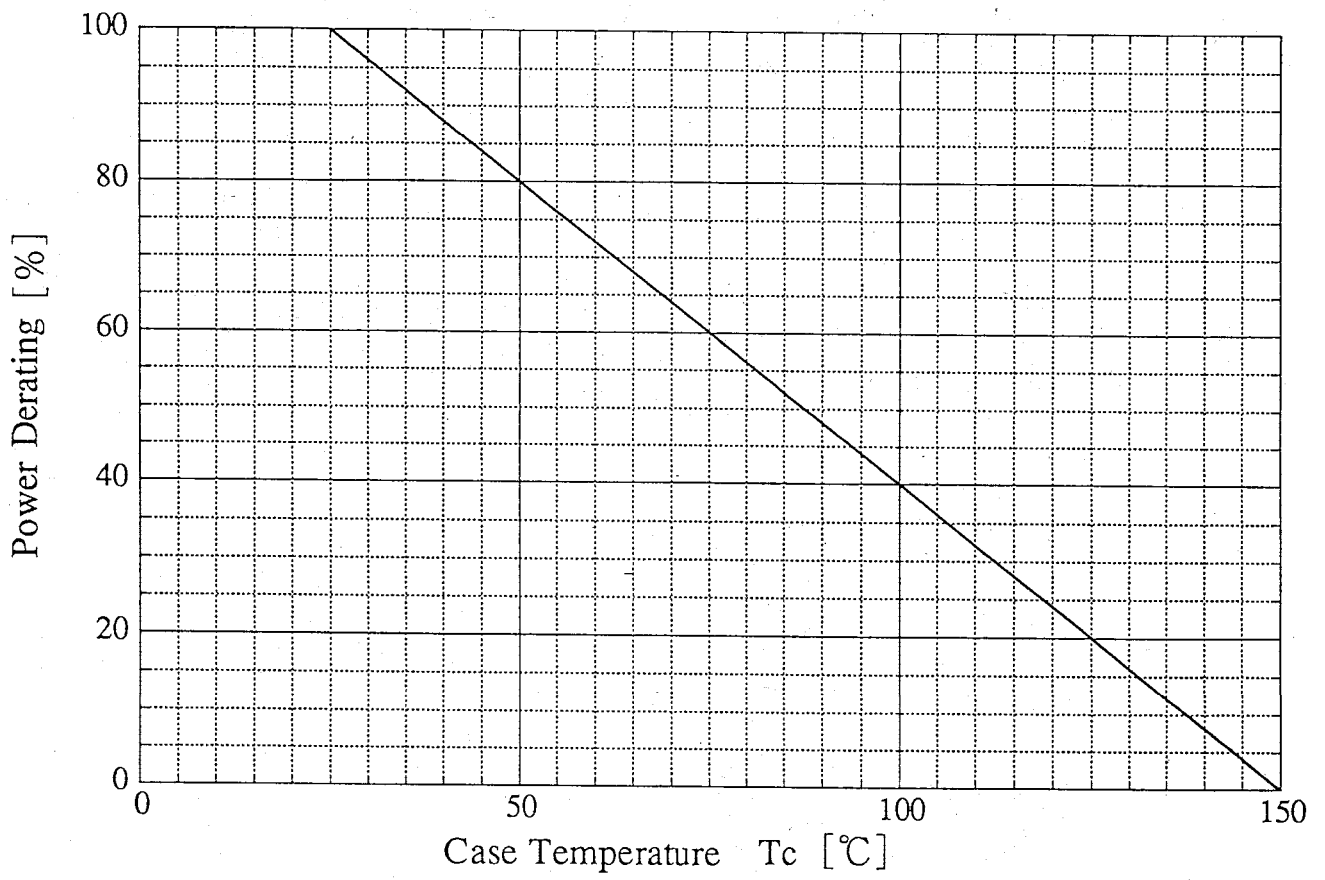






## 2SK1861 Power Derating

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## 2SK1861 Gate Charge Characteristics

