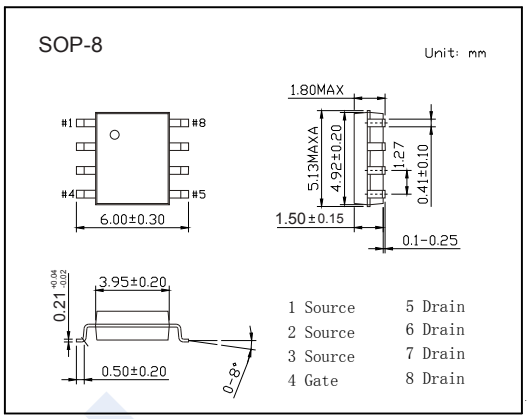
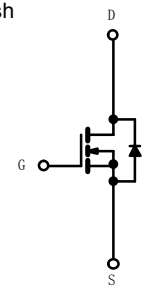
N-Channel MOSFET

SI4490DY-HF (KI4490DY-HF)



■ Features

- $V_{DS\ (V)}$ = 200V
- I_D = 4A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 80mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 90mΩ (V_{GS} = 6V)
- Pb−Free Package May be Available. The G−Suffix Denotes a Pb−Free Lead Finish



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	10S	Steady State	Unit
Drain-Source Voltage		V_{DS}	200		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current (T_J=150℃) *1	TA=25℃	I_D	4	2.85	A
	TA=70℃		3.2	2.3	
Pulsed Drain Current		I_{DM}	40		
Avalanch Current	L=0.1mH	I_{AS}	15		
Power Dissipation *1	TA=25℃	P_D	3.1	1.56	W
	TA=70℃		2	1	
Thermal Resistance.Junction- to-Ambient *1		R_{thJA}	40	80	℃/W
Thermal Resistance.Junction- to-Foot		R_{thJF}		21	
Junction Temperature		T_J	150		℃
Storage Temperature Range		T_{stg}	-55 to 150		

*1: Surface Mounted on 1" x 1" FR4 board.

■ Marking

Marking	4490 KC**** F

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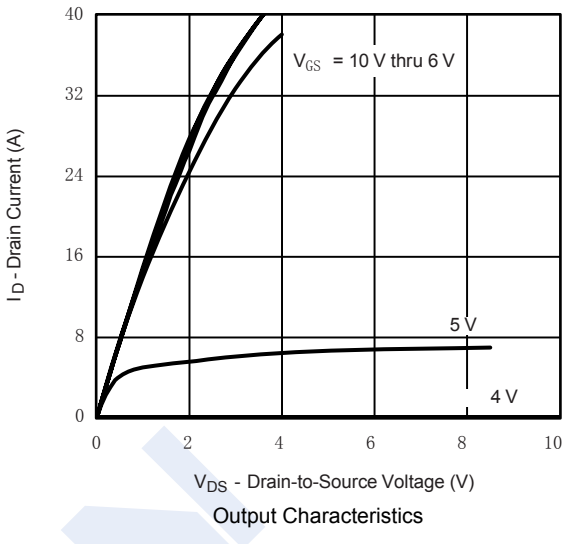
■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	200			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=160V, V_{GS}=0V			1	μA
		V_{DS}=160V, V_{GS}=0V, T_J=55℃			5	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2			V
Static Drain-Source On-Resistance *1	$R_{DS(on)}$	V_{GS}=10V, I_D=4A			80	mΩ
		V_{GS}=6V, I_D=4A			90	
On State Drain Current	$I_{D(ON)}$	V_{GS}= 10 V, V_{DS} ≥ 5V	40			A
Forward Transconductance *1	g_{FS}	V_{DS}=15V, I_D=5A		19		S
Gate Resistance *2	R_g		0.2	0.85	1.3	Ω
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=100V, I_D=4A *2		34	42	nC
Gate Source Charge	Q_{gs}			7.5		
Gate Drain Charge	Q_{gd}			12		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=100V, R_L=25Ω, R_G=6Ω, I_D=4A *2		14	20	ns
Turn-On Rise Time	t_r			20	30	
Turn-Off DelayTime	$t_{d(off)}$			32	50	
Turn-Off Fall Time	t_f			25	35	
Body Diode Reverse Recovery Time	t_{rr}	I_F= 2.8A, di/dt= 100A/μs		70	100	
Maximum Body-Diode Continuous Current	I_S				2.8	A
Diode Forward Voltage *1	V_{SD}	I_S=2.8A,V_{GS}=0V		0.75	1.2	V

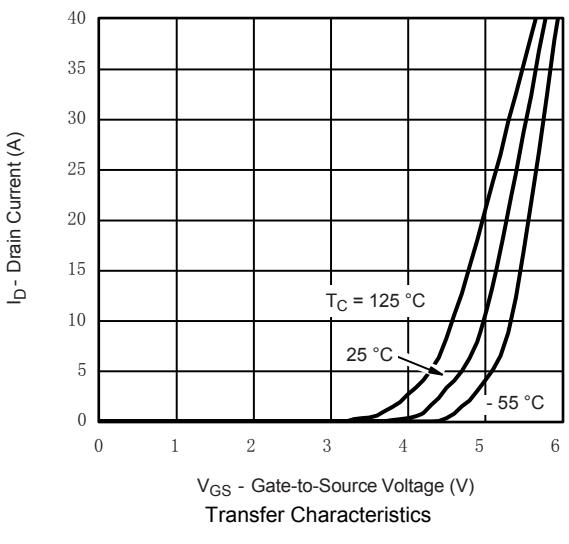
*1: Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.

*2: Guaranteed by design, not subject to production testing.

■ Typical Characterisitics



Output Characteristics



Transfer Characteristics

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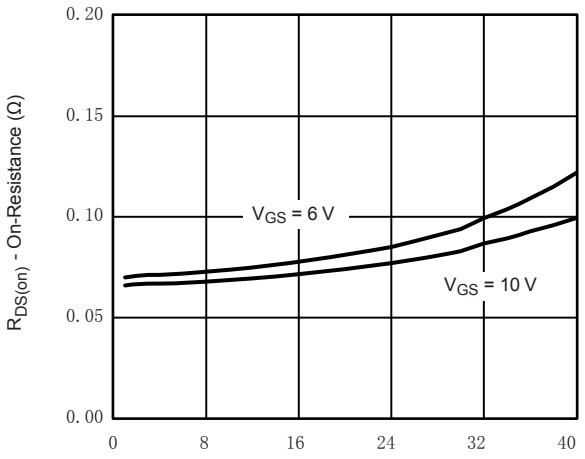
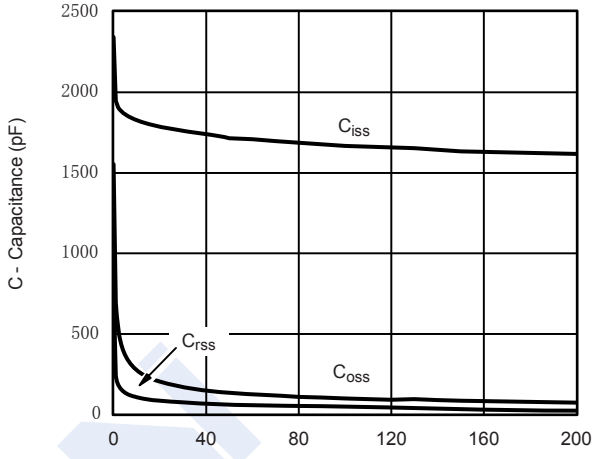
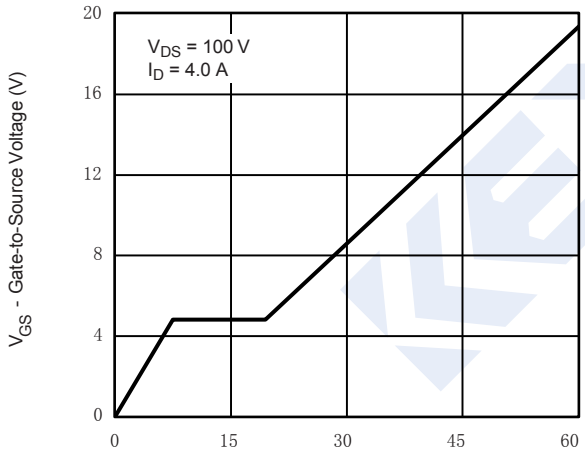
■ Typical Characterisitics



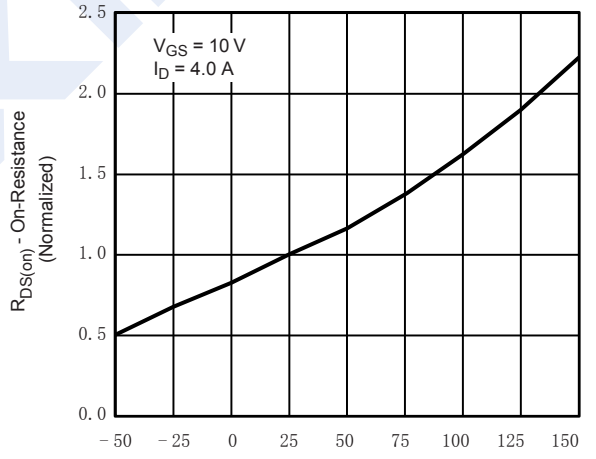
On-Resistance vs. Drain Current



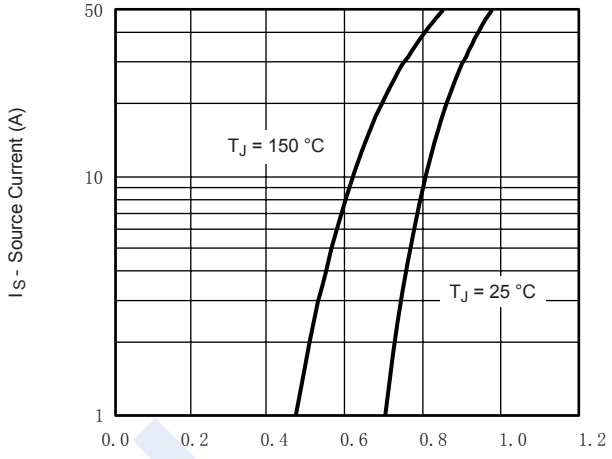
Capacitance



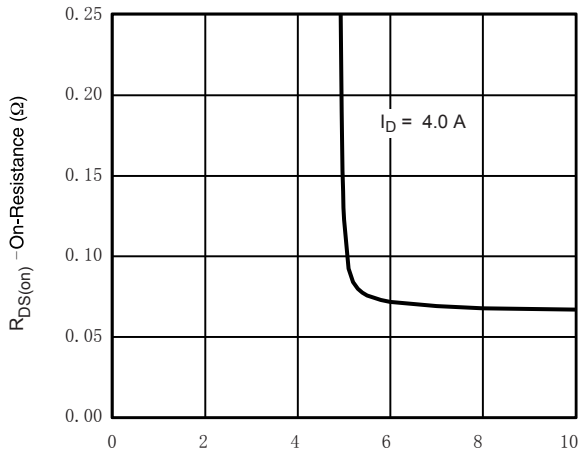
Gate Charge



On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

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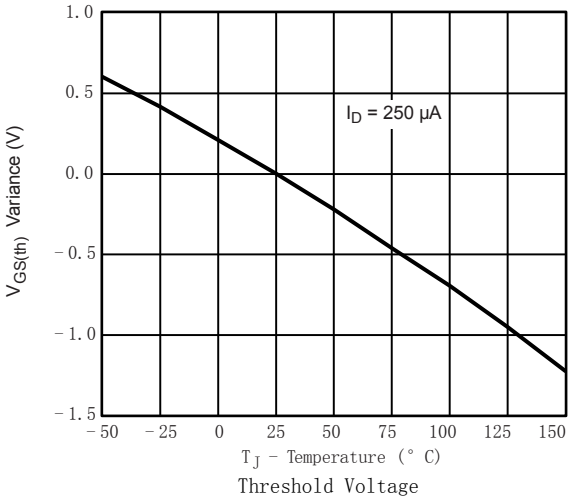
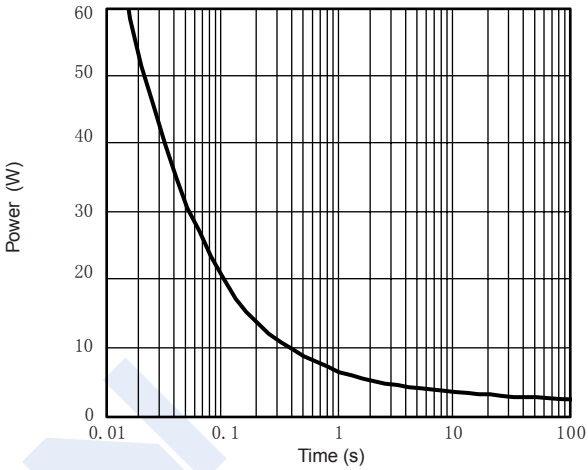
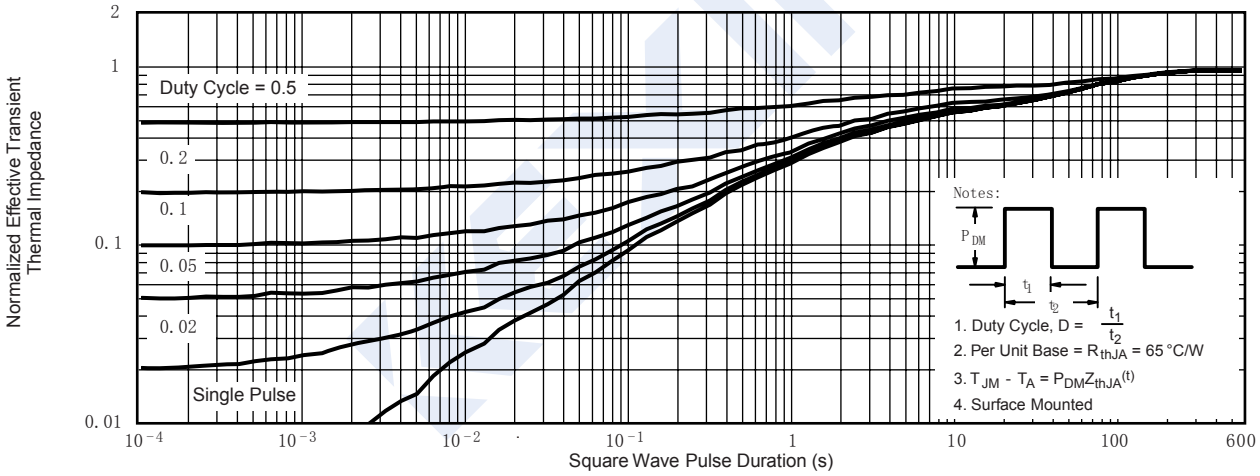
■ Typical Characterisitics



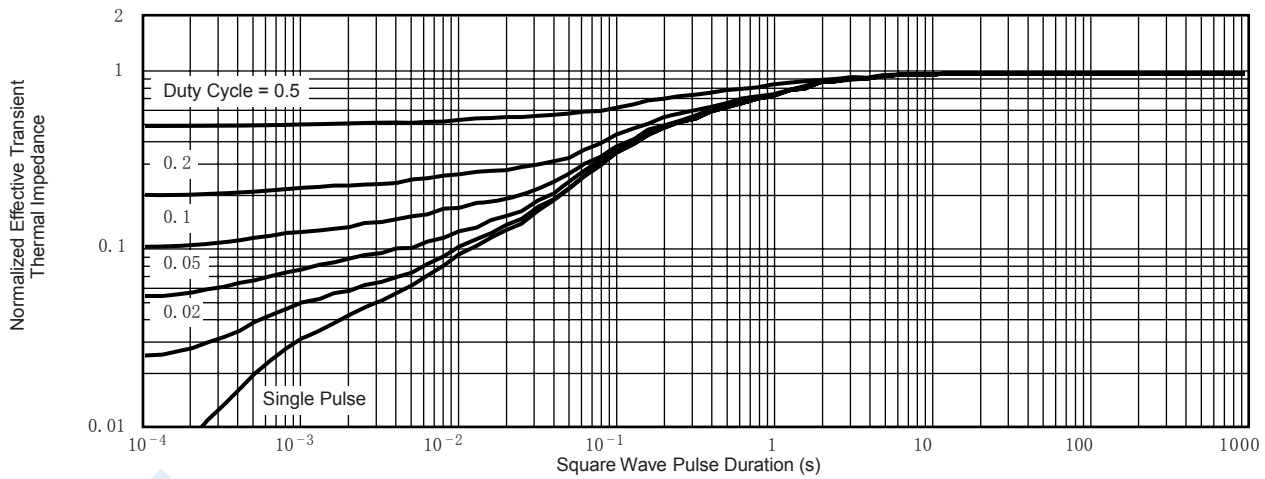
Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Im pedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot