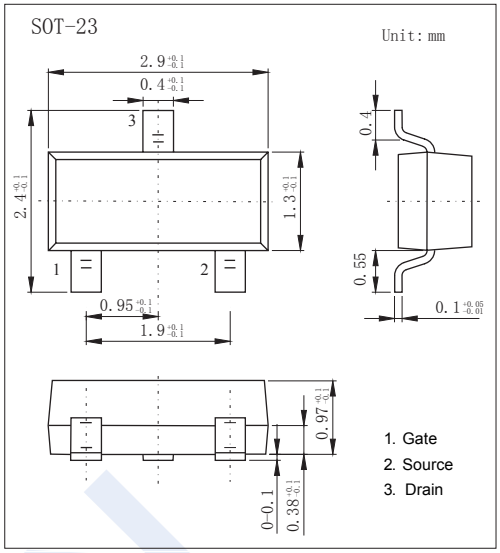
P-Channel MOSFET

SI2399DS-HF (KI2399DS-HF)

■ Features

- V_{DS} (V) =-20V
- I_D =-6 A (V_{GS} =±12V)
- $R_{DS(ON)}$ < 34mΩ (V_{GS} =-10V)
- $R_{DS(ON)}$ < 45mΩ (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 67mΩ (V_{GS} =-2.5V)



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current	T_C=25℃	I_D	-6	A
	T_C=70℃		-5.8	
	T_A=25℃*1*2		-5.1	
	T_A=70℃*1*2		-4.1	
Pulsed Drain Current		I_{DM}	-20	
Power Dissipation	T_C=25℃	P_D	2.5	W
	T_C=70℃		1.6	
	T_A=25℃*1*2		1.25	
	T_A=70℃*1*2		0.8	
Thermal Resistance.Junction- to-Ambient	≤5S*1*3	R_{thJA}	100	℃/W
Thermal Resistance.Junction- to-Foot		R_{thJC}	50	
Junction Temperature		T_J	150	℃
Junction Storage Temperature Range		T_{stg}	-55 to 150	

Notes:
*1. Surface mounted on 1" x 1" FR4 board.
*2. t = 5 s.
*3. Maximum under steady state conditions is 166 °C/W.

P-Channel MOSFET

SI2399DS-HF (KI2399DS-HF)

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-250μA, V_{GS}=0V	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
		V_{DS}=-20V, V_{GS}=0V, T_J=55℃			-10	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.6		-1.5	V
Static Drain-Source On-Resistance *1	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-5.1A			34	mΩ
		V_{GS}=-4.5V, I_D=-4.5A			45	
		V_{GS}=-2.5V, I_D=-3.7A			67	
On State Drain Current *1	$I_{D(ON)}$	V_{GS}=-4.5V, V_{DS}≤-5V	-20			A
Forward Transconductance *1	g_{FS}	V_{DS}=-5V, I_D=-5.1A		15		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-10V, f=1MHz		835		pF
Output Capacitance	C_{oss}			180		
Reverse Transfer Capacitance	C_{rss}			155		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	0.9		8.8	Ω
Total Gate Charge	Q_g	V_{GS}=-4.5V, V_{DS}=-10V, I_D=-5.1A			20	nC
		V_{GS}=-2.5V, V_{DS}=-10V, I_D=-5.1A			9.6	
Gate Source Charge	Q_{gs}			1.7		
Gate Drain Charge	Q_{gd}			3.4		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-4.5V, V_{DS}=-10V, R_L=2.4Ω, R_{GEN}=1Ω, I_D=-4.1A			33	ns
Turn-On Rise Time	t_r				30	
Turn-Off DelayTime	$t_{d(off)}$				42	
Turn-Off Fall Time	t_f				18	
Body Diode Reverse Recovery Time	t_{rr}	I_F=-4.1A, dI/dt=100A/us, T_J=25℃			35	
Body Diode Reverse Recovery Charge	Q_{rr}				20	nC
Reverse Recovery Fall Time	t_a			15		ns
Reverse Recovery Rise Time	t_b			8		
Maximum Body-Diode Continuous Current	I_S	T_C=25℃			-2.1	A
Diode Forward Voltage	V_{SD}	I_S=-2.1A, V_{GS}=0V			-1.2	V

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

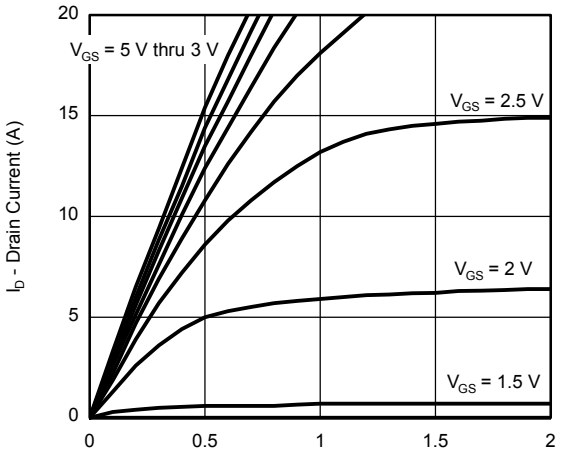
■ Marking

Marking	O1F**

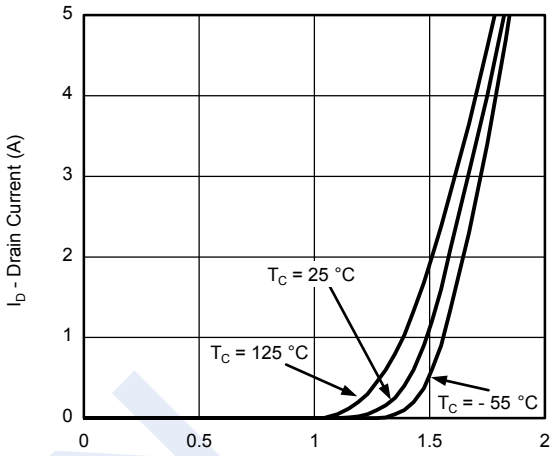
P-Channel MOSFET

SI2399DS-HF (KI2399DS-HF)

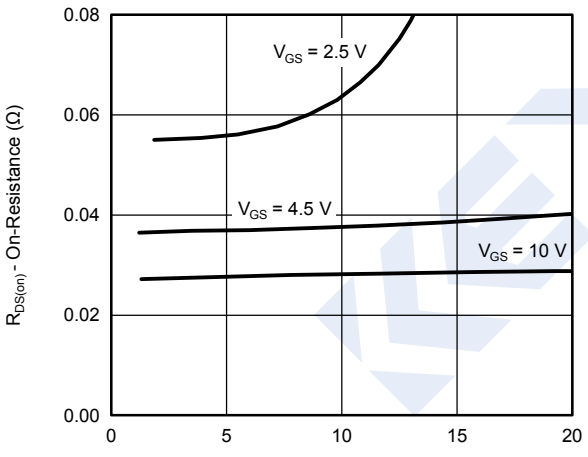
■ Typical Characterisitics



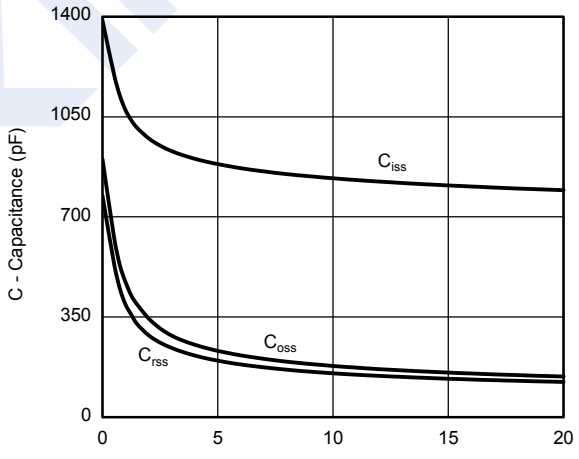
Output Characteristics



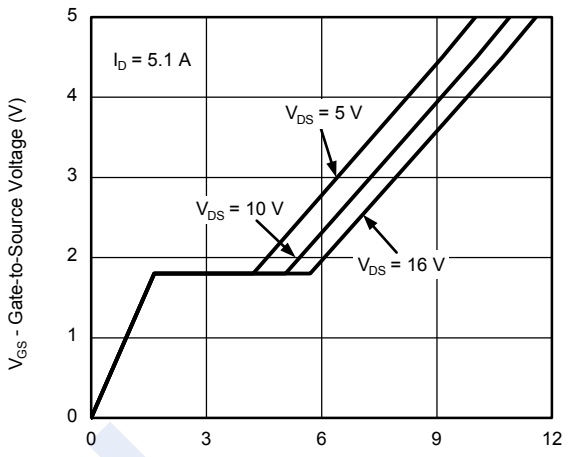
Transfer Characteristics



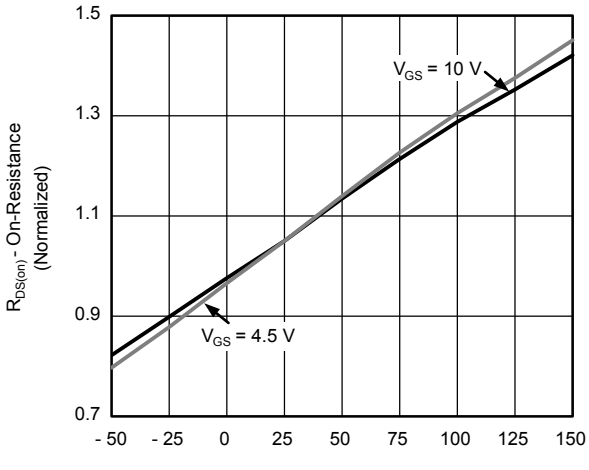
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

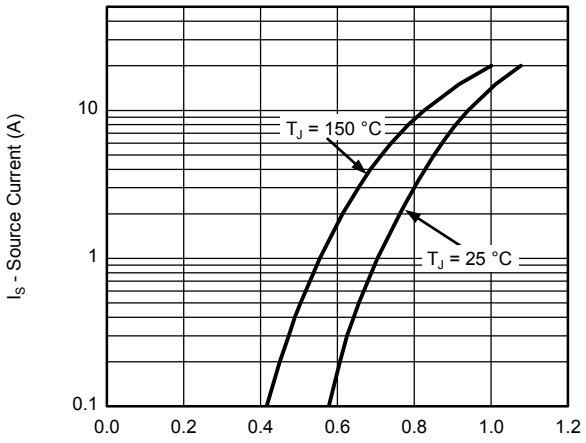


On-Resistance vs. Junction Temperature

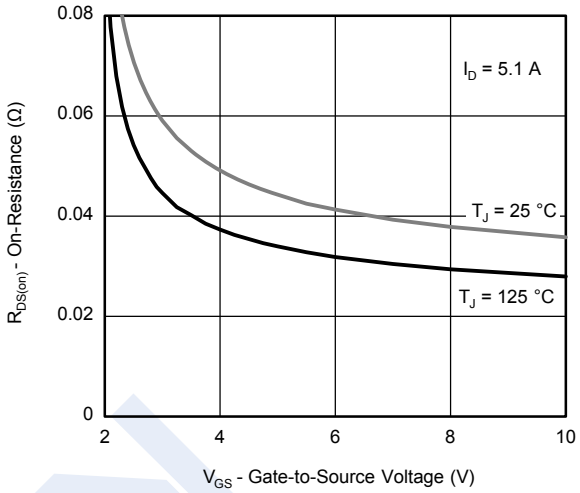
P-Channel MOSFET

SI2399DS-HF (KI2399DS-HF)

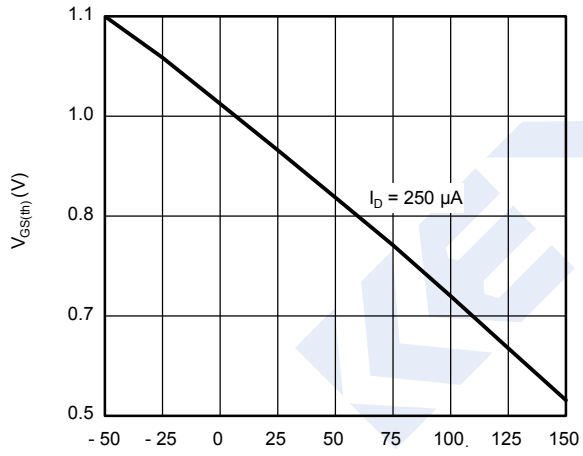
■ Typical Characterisitics



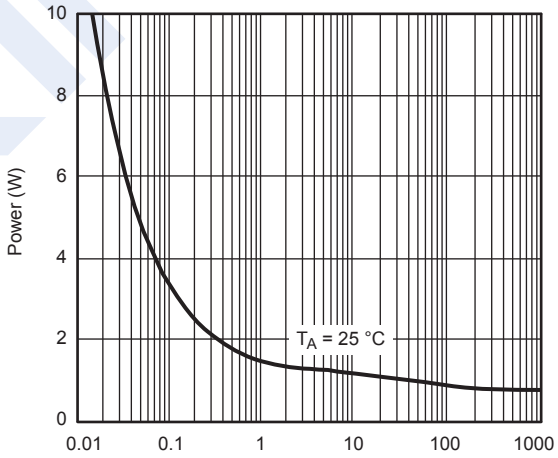
Source-Drain Diode Forward Voltage



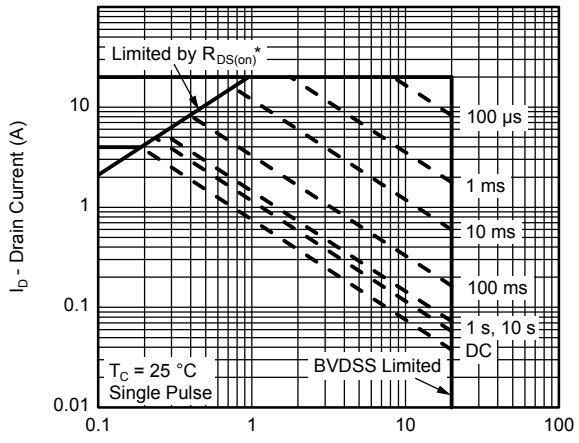
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



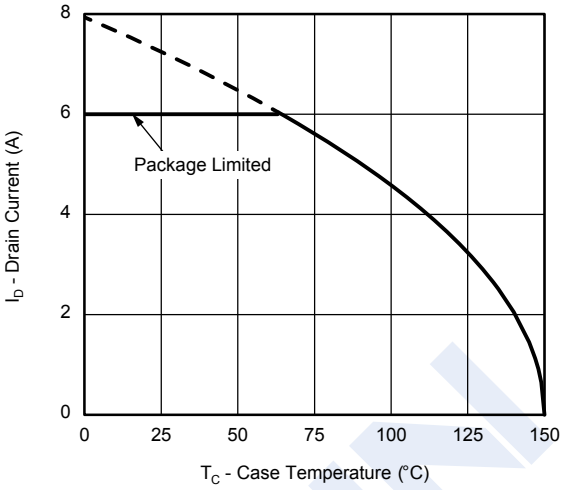
* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area

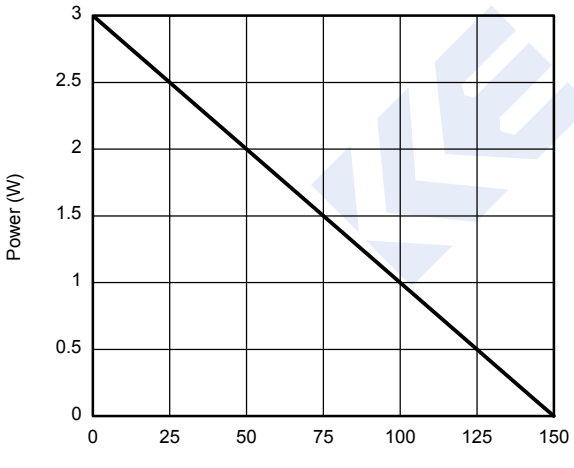
P-Channel MOSFET

SI2399DS-HF (KI2399DS-HF)

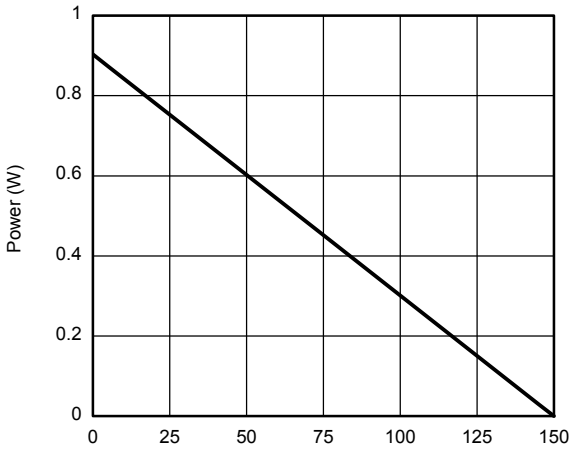
■ Typical Characterisitics



Current Derating*



Power, Junction-to-Foot

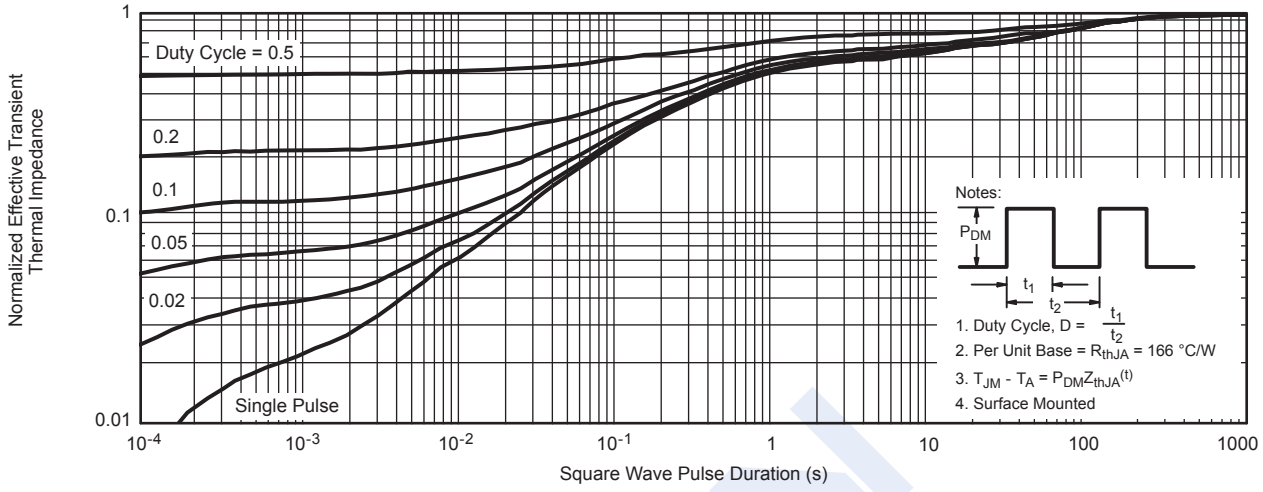


Power, Junction-to-Ambient

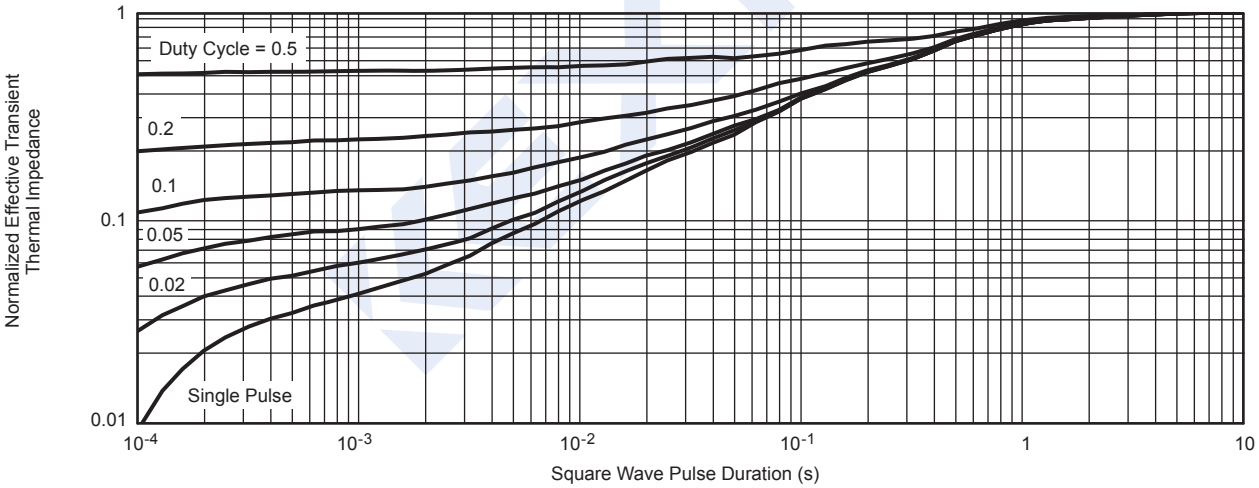
P-Channel MOSFET

SI2399DS-HF (KI2399DS-HF)

■ Typical Characterisitics



Normalized Thermal Transient Im pedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot