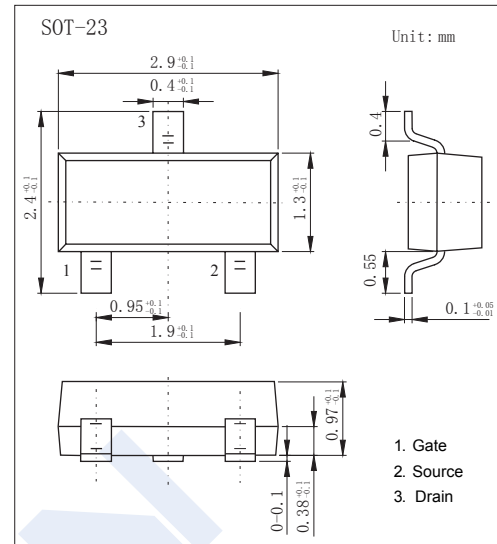


## P-Channel MOSFET

### SI2369DS (KI2369DS)

#### ■ Features

- $V_{DS} (V) = -30V$
- $I_D = -7.6A (V_{GS} = \pm 20V)$
- $R_{DS(ON)} < 29m\Omega (V_{GS} = -10V)$
- $R_{DS(ON)} < 34m\Omega (V_{GS} = -6V)$
- $R_{DS(ON)} < 40m\Omega (V_{GS} = -4.5V)$



#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	-30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Continuous Drain Current ( $T_J = 150^\circ C$ )	$I_D$	$T_C = 25^\circ C$	-7.6	
		$T_C = 70^\circ C$	-6.1	
		$T_A = 25^\circ C^{*1*2}$	-5.4	
		$T_A = 70^\circ C^{*1*2}$	-4.3	
Pulsed Drain Current ( $t = 100\mu s$ )	$I_{DM}$	-80	W	
Power Dissipation	$P_D$	$T_C = 25^\circ C$		2.5
		$T_C = 70^\circ C$		1.6
		$T_A = 25^\circ C^{*1*2}$		1.25
		$T_A = 70^\circ C^{*1*2}$	0.8	
Thermal Resistance.Junction- to-Ambient <sup>*1*3</sup>	$t \leq 5S$	$R_{thJA}$	100	$^\circ C/W$
Thermal Resistance.Junction- to-Foot		$R_{thJC}$	50	
Junction Temperature	$T_J$	150	$^\circ C$	
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  $166^\circ C/W$ .

## P-Channel MOSFET

### SI2369DS (KI2369DS)

#### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =-250 μ A, V <sub>GS</sub> =0V	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V			-1	μ A
		V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C			-5	
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250 μ A	-1.2		-2.5	V
Static Drain-Source On-Resistance *1	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-5.4A			29	m Ω
		V <sub>GS</sub> =-6V, I <sub>D</sub> =-5A			34	
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.6A			40	
On State Drain Current *1	I <sub>D(ON)</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> ≤-5V	-25			A
Forward Transconductance *1	g <sub>FS</sub>	V <sub>DS</sub> =-15V, I <sub>D</sub> =-5.4A		18		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-15V, f=1MHz		1295		pF
Output Capacitance	C <sub>oss</sub>			150		
Reverse Transfer Capacitance	C <sub>rss</sub>			130		
Gate Resistance	R <sub>g</sub>	f=1MHz	1.5		15.4	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-5.4A			36	nC
		V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-5.4A			17	
Gate Source Charge	Q <sub>gs</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-15V, I <sub>D</sub> =-5.4A		3.4		nC
Gate Drain Charge	Q <sub>gd</sub>			3.8		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V, R <sub>L</sub> =3.5Ω, R <sub>GEN</sub> =1Ω I <sub>D</sub> ≤-4.3A			20	ns
Turn-On Rise Time	t <sub>r</sub>				8	
Turn-Off DelayTime	t <sub>d(off)</sub>				57	
Turn-Off Fall Time	t <sub>f</sub>				12	
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-15V, R <sub>L</sub> =3.5Ω, R <sub>GEN</sub> =1Ω I <sub>D</sub> ≤-4.3A			42	ns
Turn-On Rise Time	t <sub>r</sub>				24	
Turn-Off DelayTime	t <sub>d(off)</sub>				45	
Turn-Off Fall Time	t <sub>f</sub>				20	
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =-4.3A, di/dt=100A/μs, T <sub>J</sub> =25°C			23	nC
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>				14	
Reverse Recovery Fall Time	t <sub>a</sub>			8		ns
Reverse Recovery Rise Time	t <sub>b</sub>			7		
Maximum Body-Diode Continuous Current	I <sub>S</sub>	T <sub>C</sub> =25°C			-2.1	A
Pulse Diode Forward Current (t = 100 μs)	I <sub>SM</sub>				-80	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-4.3A, V <sub>GS</sub> =0V			-1.2	V

#### NOTES:

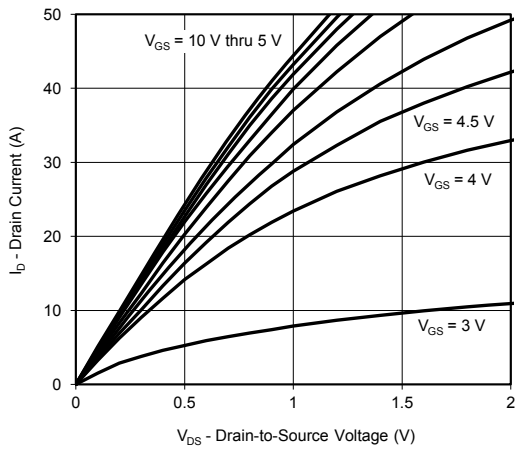
\*1. Pulse test; pulse width ≤300 μs, duty cycle ≤2 %.

#### ■ Marking

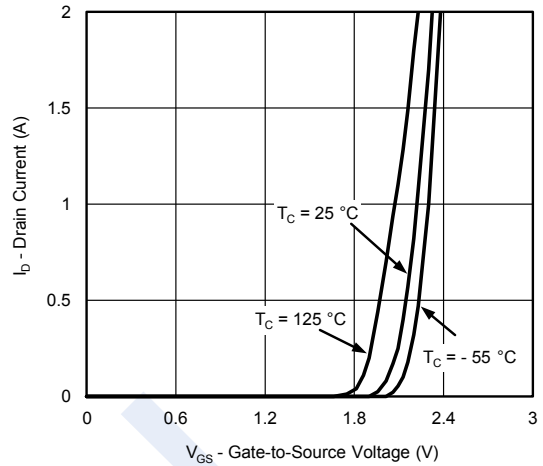
Marking	H9**
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## P-Channel MOSFET SI2369DS (KI2369DS)

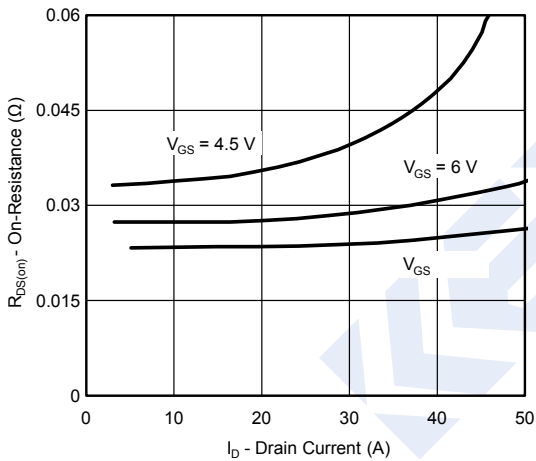
■ Typical Characteristics



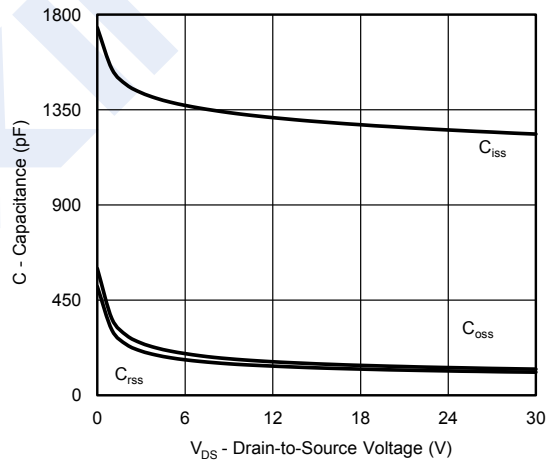
Output Characteristics



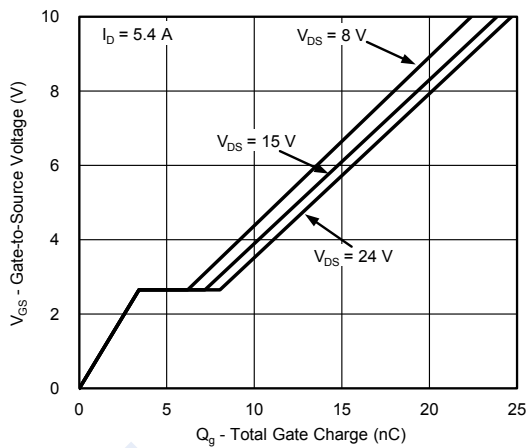
Transfer Characteristics



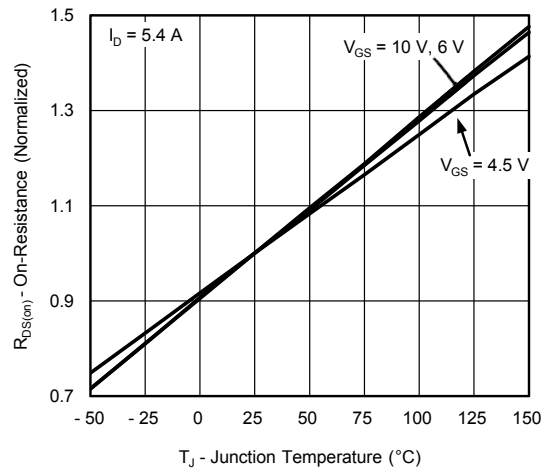
On-Resistance vs. Drain Current



Capacitance



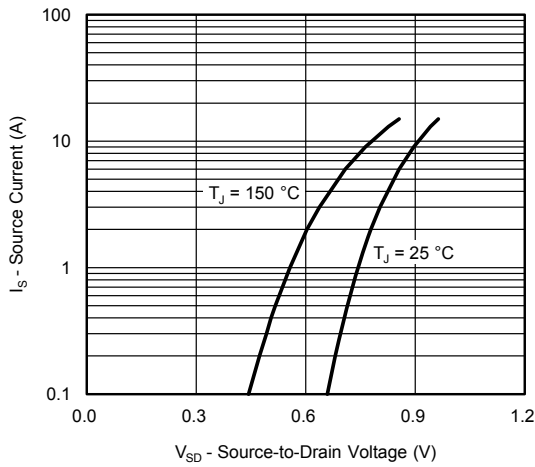
Gate Charge



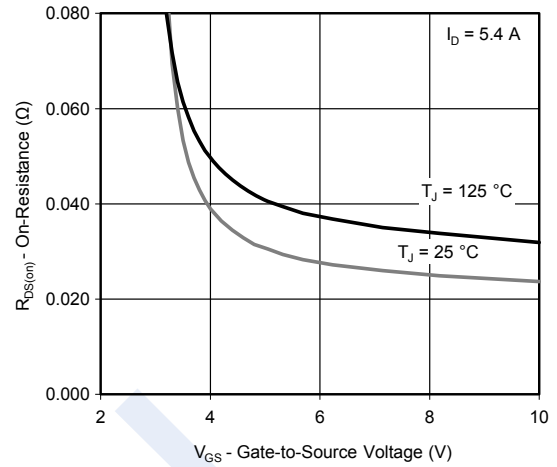
On-Resistance vs. Junction Temperature

## P-Channel MOSFET SI2369DS (KI2369DS)

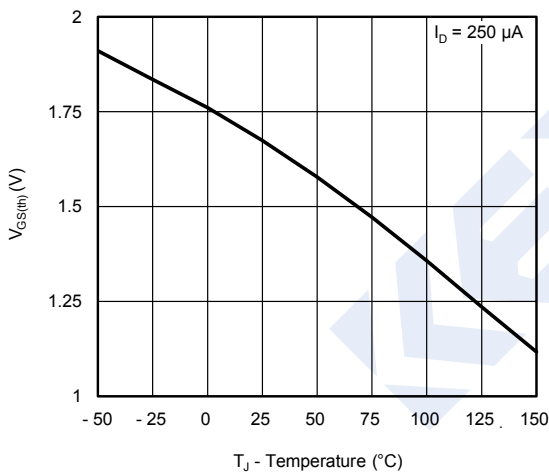
■ Typical Characteristics



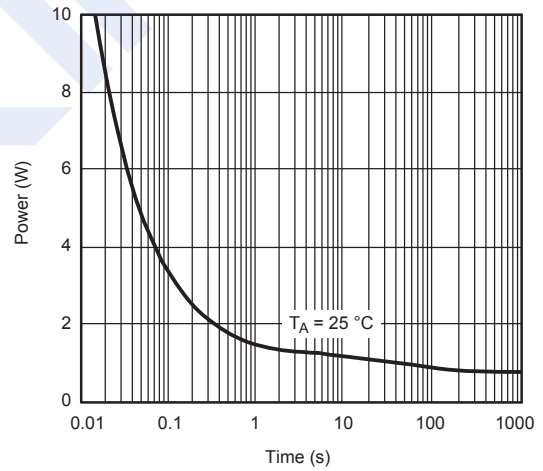
Source-Drain Diode Forward Voltage



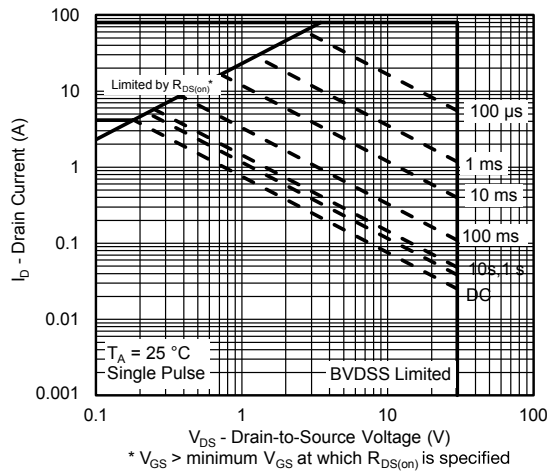
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



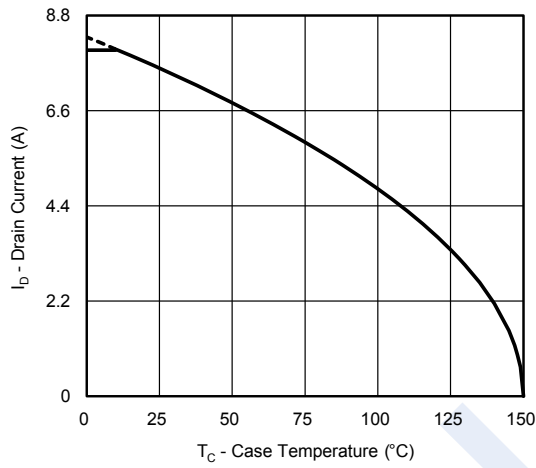
Single Pulse Power (Junction-to-Ambient)



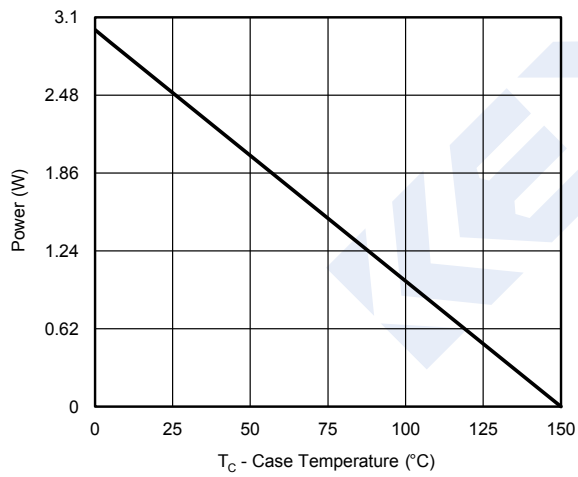
Safe Operating Area, Junction-to-Ambient

## P-Channel MOSFET SI2369DS (K12369DS)

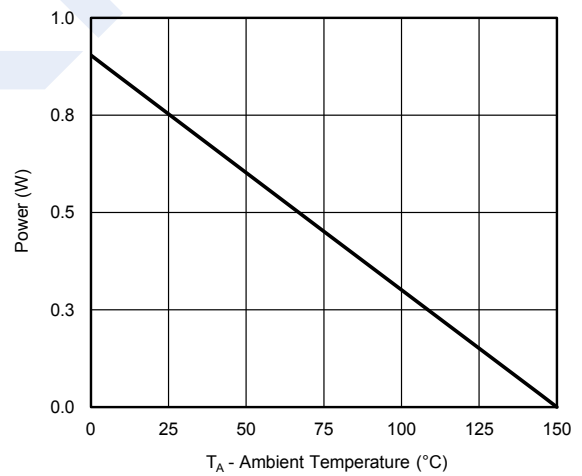
■ Typical Characteristics



Current Derating\*



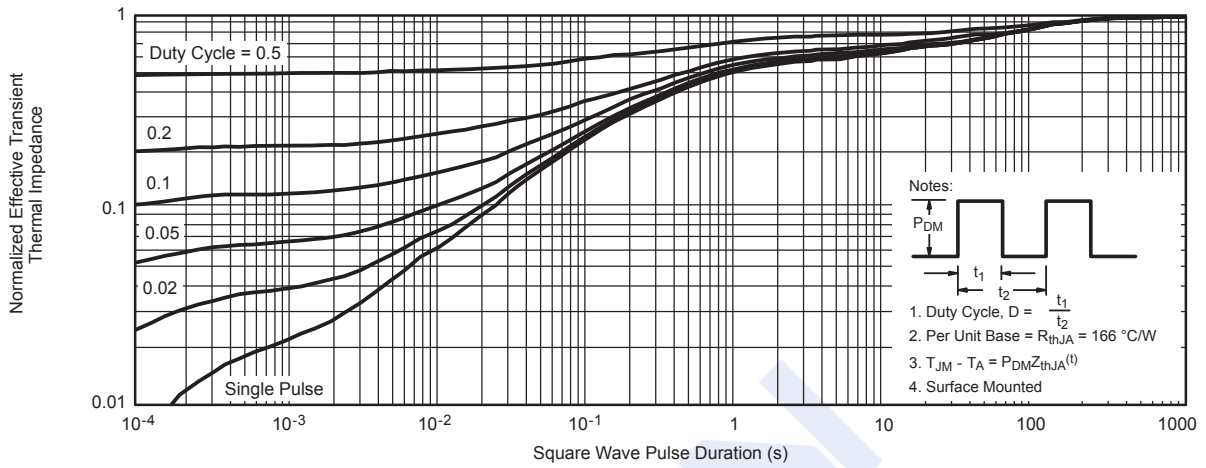
Power, Junction-to-Foot



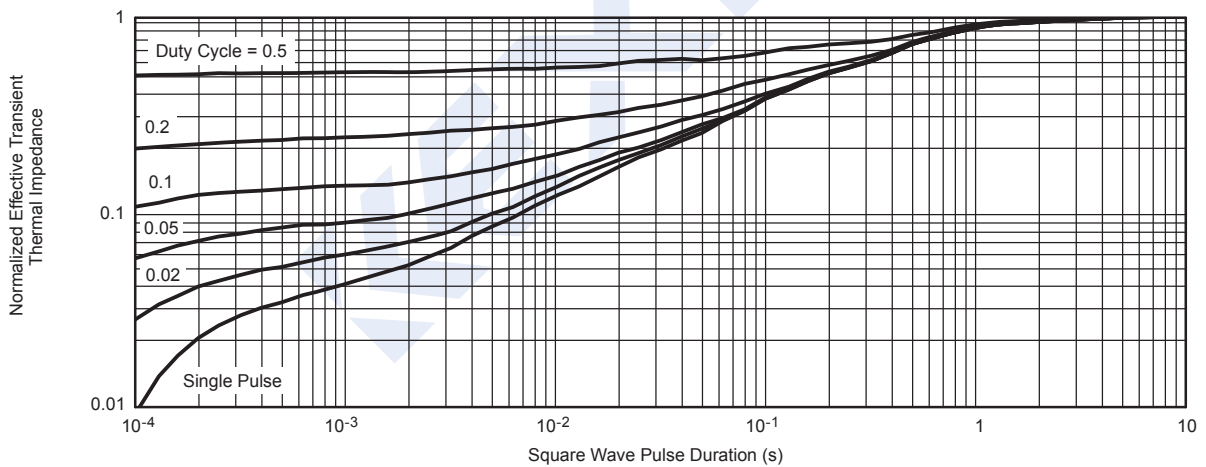
Power, Junction-to-Ambient

## P-Channel MOSFET SI2369DS (KI2369DS)

■ Typical Characteristics



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot