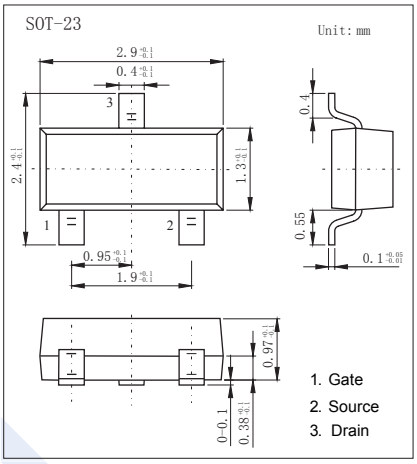
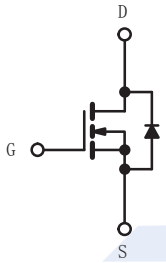
N-Channel MOSFET

SI2356DS (KI2356DS)



■ Features

- V_{DS} (V) = 40V
- I_D = 4.3 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 51mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 54mΩ (V_{GS} = 4.5V)
- $R_{DS(ON)}$ < 70mΩ (V_{GS} = 2.5V)



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current (T_J = 150℃)	Tc=25℃	I_D	4.3	A
	Tc=70℃		3.4	
	Ta=25℃		3.2	
	Ta=70℃		2.6	
Pulsed Drain Current (t=100us)		I_{DM}	20	
Power Dissipation	Tc=25℃	P_D	1.7	W
	Tc=70℃		1.1	
	Ta=25℃		0.96	
	Ta=70℃		0.62	
Thermal Resistance.Junction- to-Ambient	t≤5 s	R_{thJA}	130	℃/W
Thermal Resistance.Junction- to-Foot		R_{thJF}	75	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

N-Channel MOSFET

SI2356DS (KI2356DS)

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	μA
		V_{DS}=40V, 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	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.2A			51	mΩ
		V_{GS}=4.5V, I_D=3.1A			54	
		V_{GS}=2.5V, I_D=2A			70	
On State Drain Current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}≥5V	10			A
Forward Transconductance	g_{FS}	V_{DS}=15V, I_D=3.2A		13		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, f=1MHz		370		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			17		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	0.2		1.4	Ω
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=3.2A		8.1	13	nC
		V_{GS}=4.5V, V_{DS}=20V, I_D=3.2A		3.8	5.7	
Gate Source Charge	Q_{gs}			0.72		
Gate Drain Charge	Q_{gd}			0.81		
Turn-On DelayTime	$t_{d(on)}$	V_{DD}=20 V, R_L=7.7Ω I_D=2.6A, V_{GEN}=10V, R_g = 1Ω		6	12	ns
Turn-On Rise Time	t_r			12	20	
Turn-Off DelayTime	$t_{d(off)}$			13	20	
Turn-Off Fall Time	t_f			6	12	
Turn-On DelayTime	$t_{d(on)}$	V_{DD}=20 V, R_L=7.7Ω I_D=2.6A, V_{GEN}=4.5V, R_g = 1Ω		10	20	
Turn-On Rise Time	t_r			52	78	
Turn-Off DelayTime	$t_{d(off)}$			18	27	
Turn-Off Fall Time	t_f			53	80	
Body Diode Reverse Recovery Time	t_{rr}	I_F= 2.6A, dI/dt= 100A/μs , T_J = 25℃		12	20	
Body Diode Reverse Recovery Charge	Q_{rr}			5	10	nC
Reverse Recovery Fall Time	t_a			8.5		ns
Reverse Recovery Rise Time	t_b			3.5		
Maximum Body-Diode Continuous Current	I_S	Tc = 25℃			1.4	A
Pulse Diode Forward Current (t = 100 μs)	I_{SM}				20	
Diode Forward Voltage	V_{SD}	I_S=2.6A,V_{GS}=0V			1.2	V

Note.Pulse test; pulse width≤300 μs, duty cycle≤2 %.

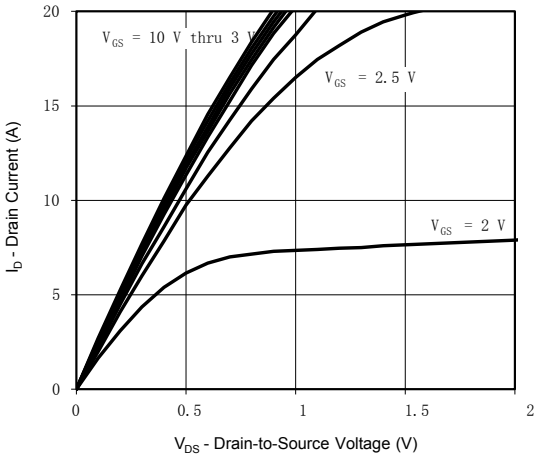
■ Marking

Marking	E9*

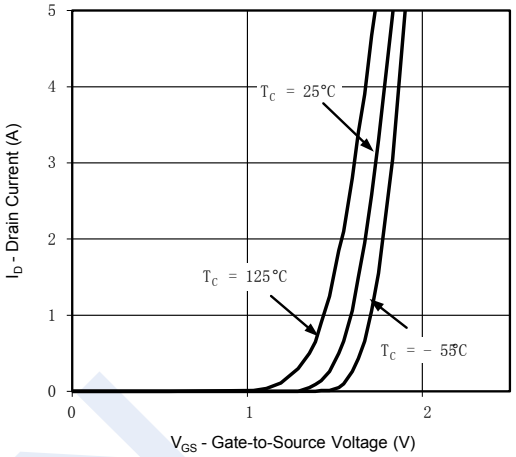
N-Channel MOSFET

SI2356DS (KI2356DS)

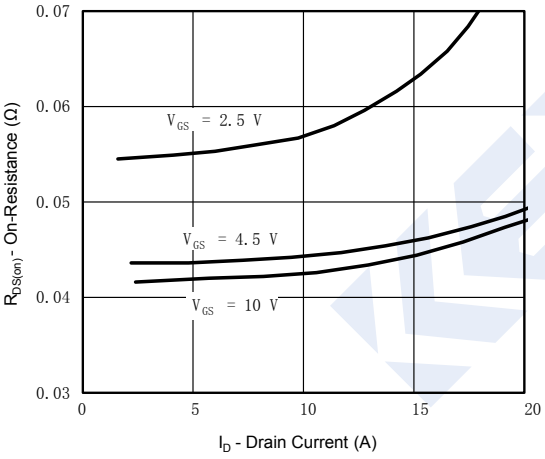
■ Typical Characterisitics



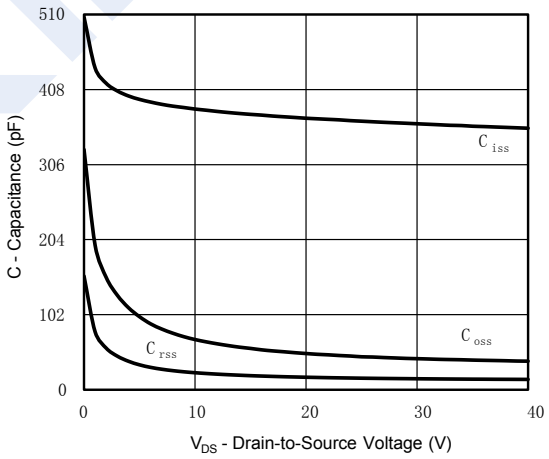
Output Characteristics



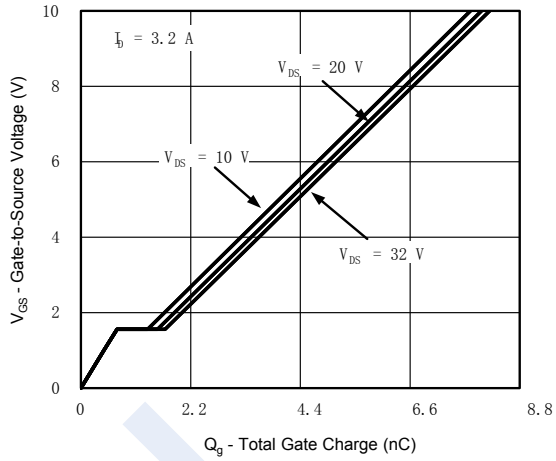
Transfer Characteristics



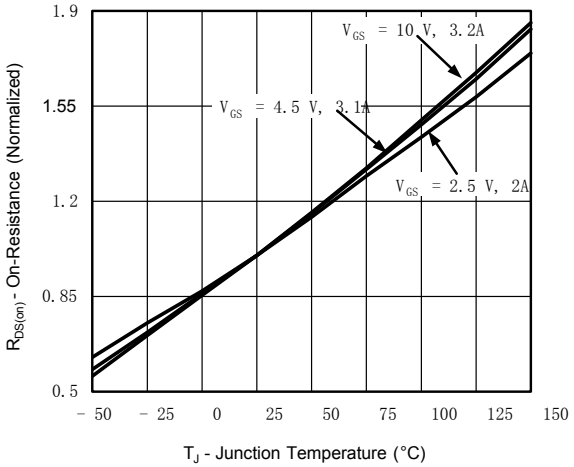
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

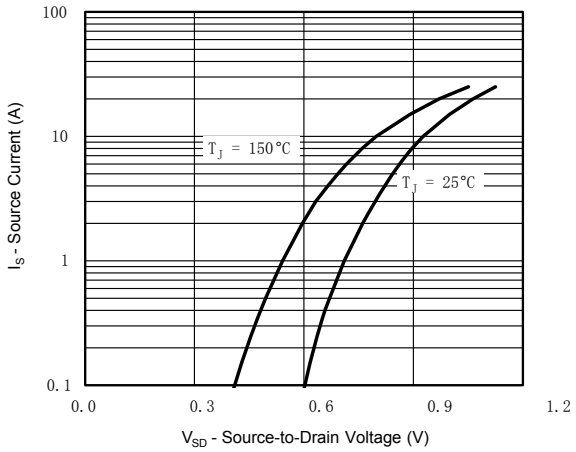


On-Resistance vs. Junction Temperature

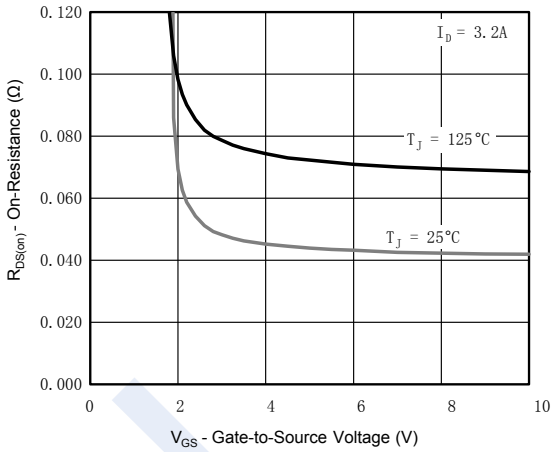
N-Channel MOSFET

SI2356DS (KI2356DS)

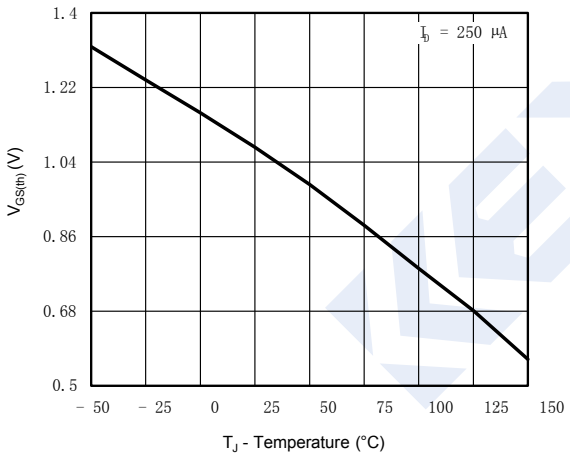
■ Typical Characterisitics



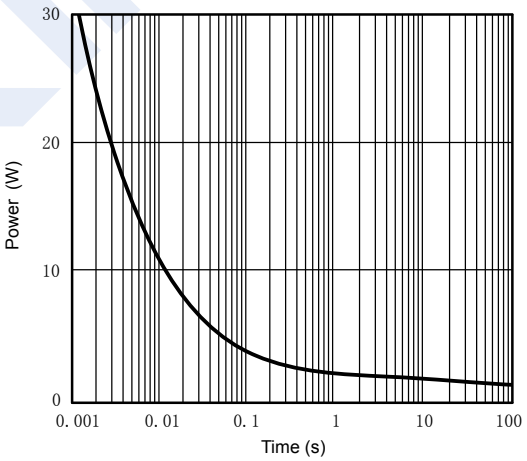
Source-Drain Diode Forward Voltage



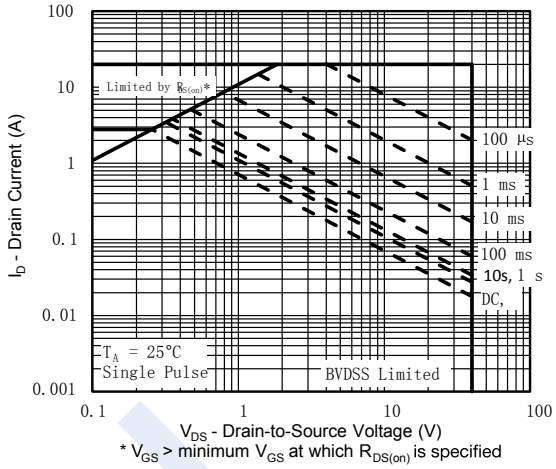
On-Resistance vs. Gate-to-Source Voltage



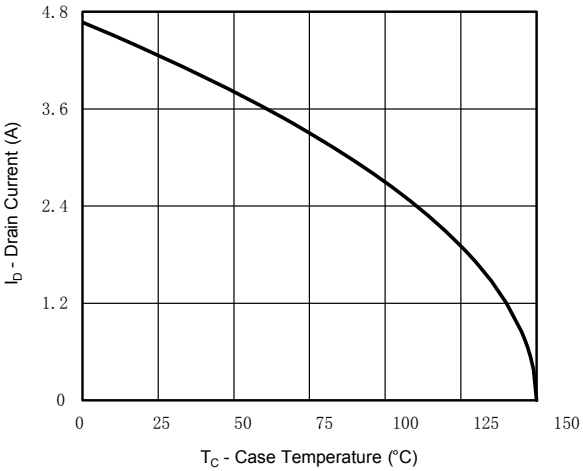
Threshold Voltage



Single Pulse Power (Junction-to-Ambient)



Safe Operating Area, Junction-to-Ambient

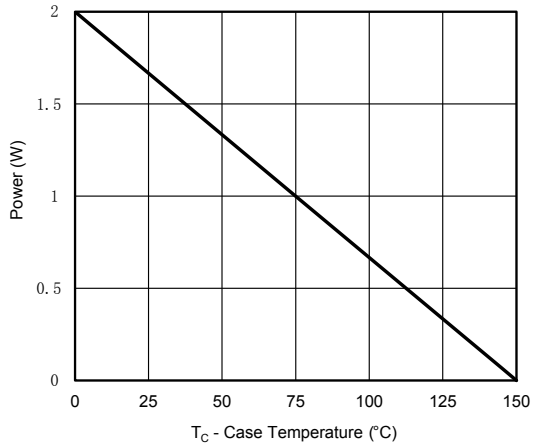


Current Derating*

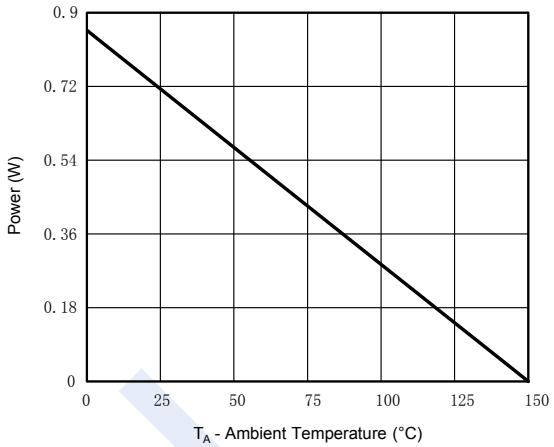
N-Channel MOSFET

SI2356DS (KI2356DS)

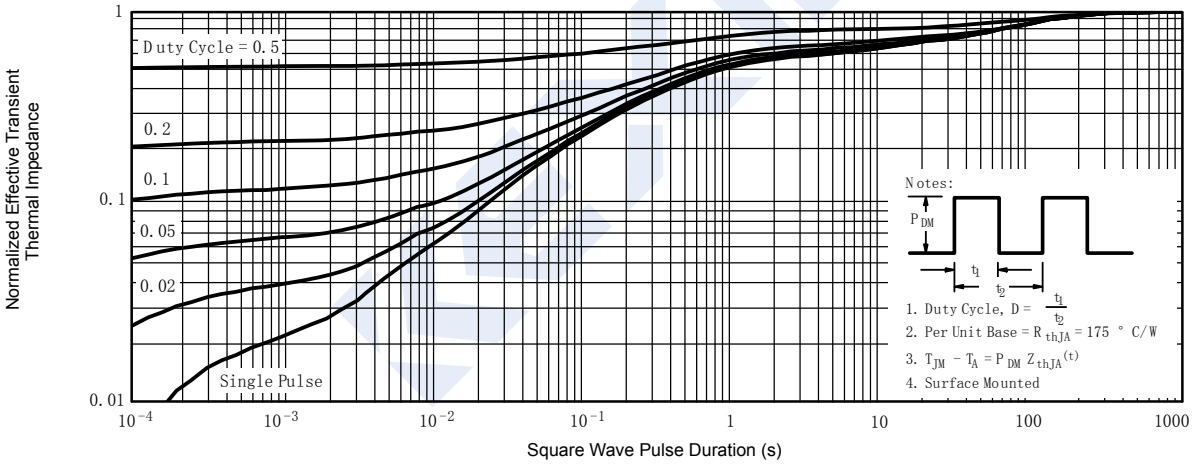
■ Typical Characterisitics



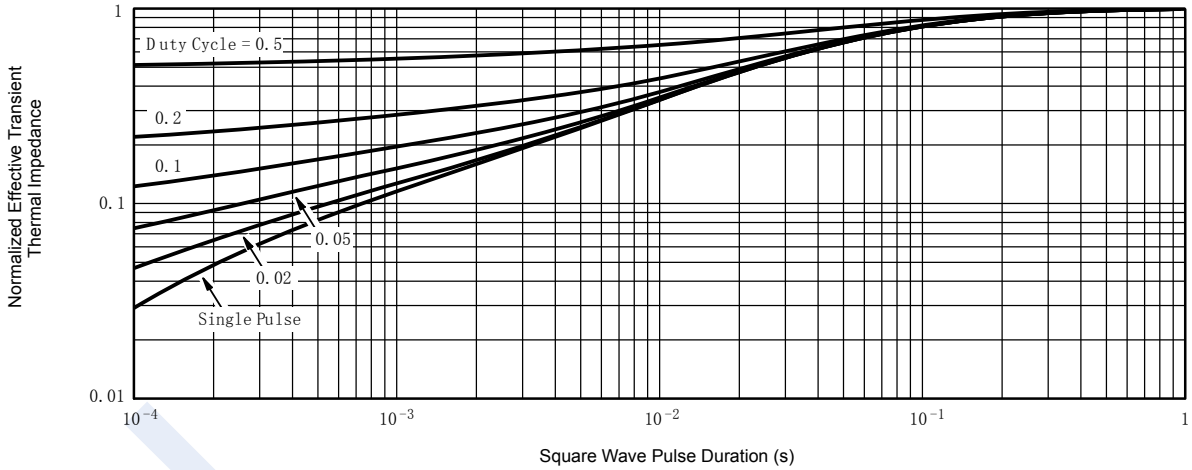
Power Junction-to-Foot



Power Junction-to-Ambient



Normalized Thermal Transient Im pedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot