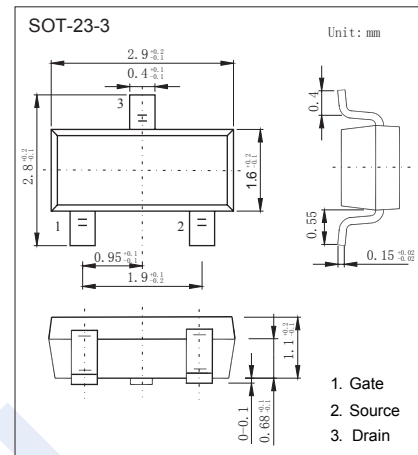
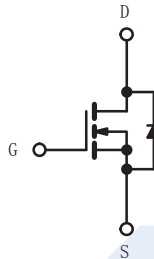


N-Channel MOSFET

SI2356DS (KI2356DS)

■ Features

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



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

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

N-Channel MOSFET

SI2356DS (KI2356DS)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μA, 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°C			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 =250 μA	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
Gate Source Charge	Q _{gs}	V _{GS} =4.5V, V _{DS} =20V, I _D =3.2A		3.8	5.7	
Gate Drain Charge	Q _{gd}			0.72		
				0.81		
Turn-On DelayTime	t _{d(on)}	V _{DD} =20V, 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} =20V, 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°C		12	20	
Body Diode Reverse Recovery Charge	Q _{rr}			5	10	
Reverse Recovery Fall Time	t _a			8.5		
Reverse Recovery Rise Time	t _b			3.5		
Maximum Body-Diode Continuous Current	I _S	T _c =25°C			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 %.

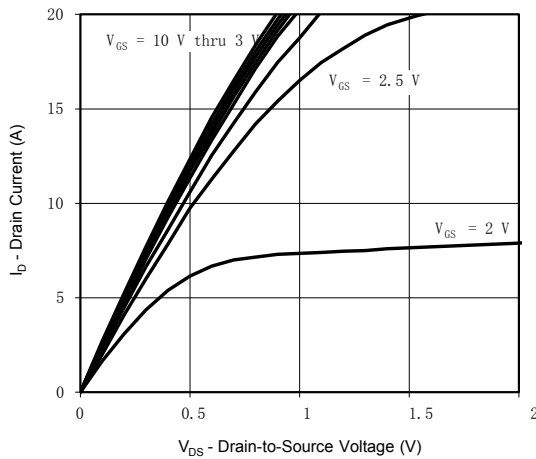
■ Marking

Marking	E9*
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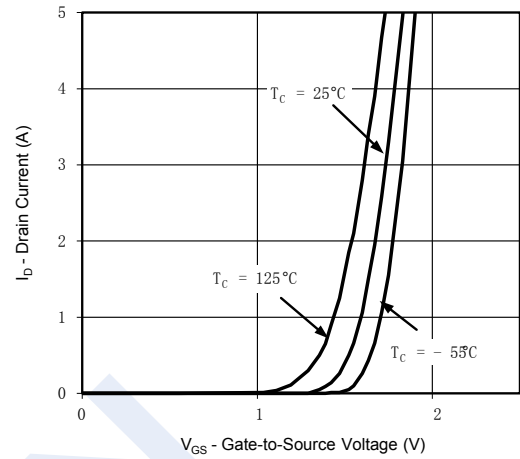
N-Channel MOSFET

SI2356DS (KI2356DS)

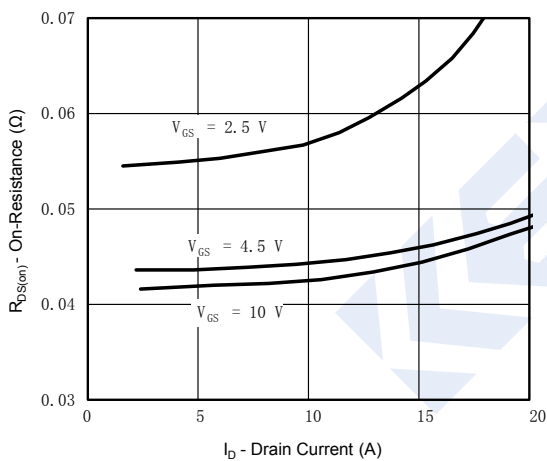
Typical Characteristics



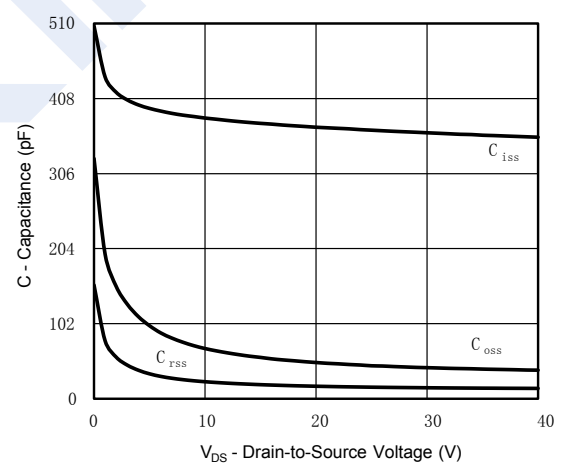
Output Characteristics



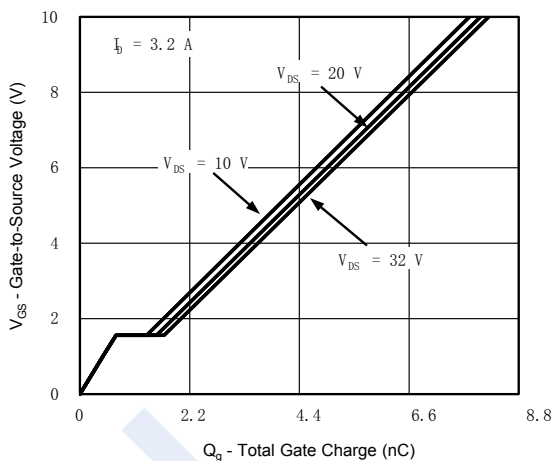
Transfer Characteristics



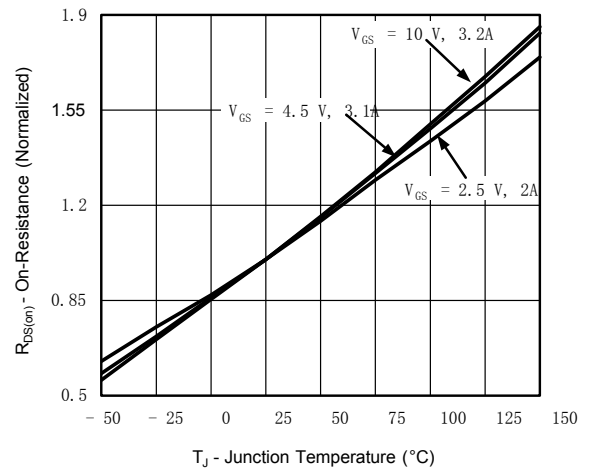
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge

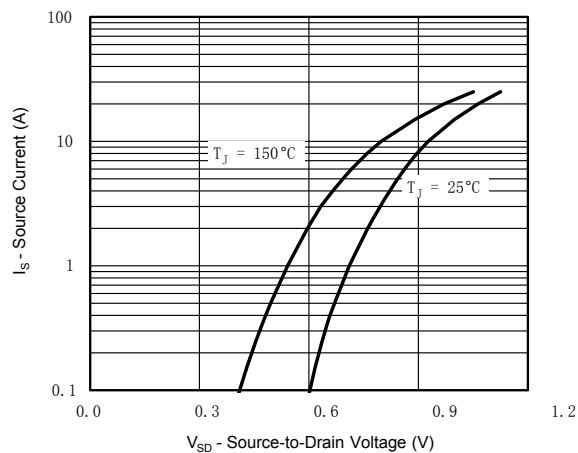


On-Resistance vs. Junction Temperature

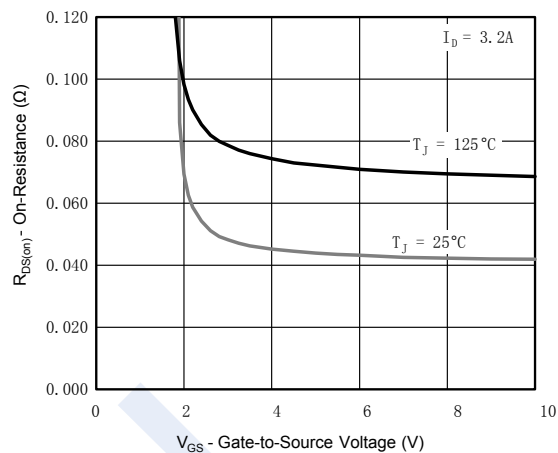
N-Channel MOSFET

SI2356DS (KI2356DS)

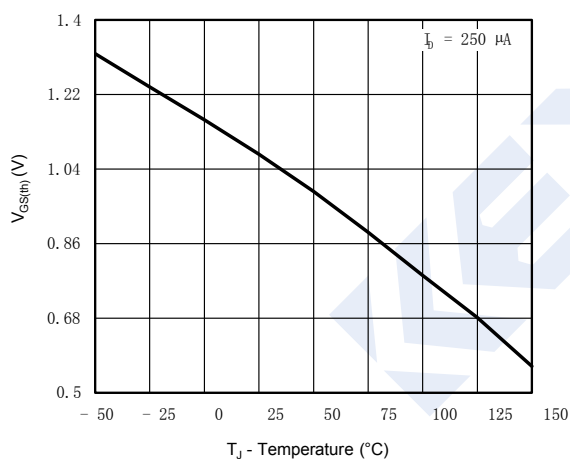
Typical Characteristics



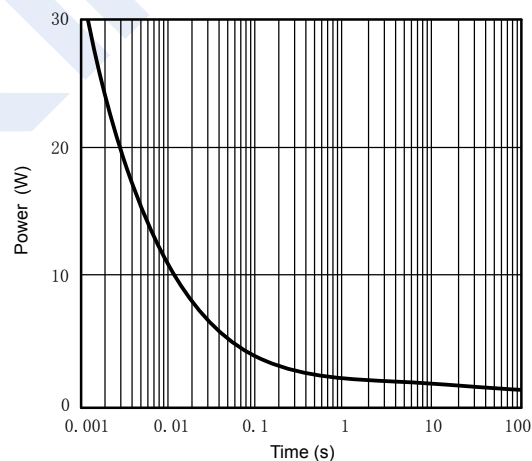
Source-Drain Diode Forward Voltage



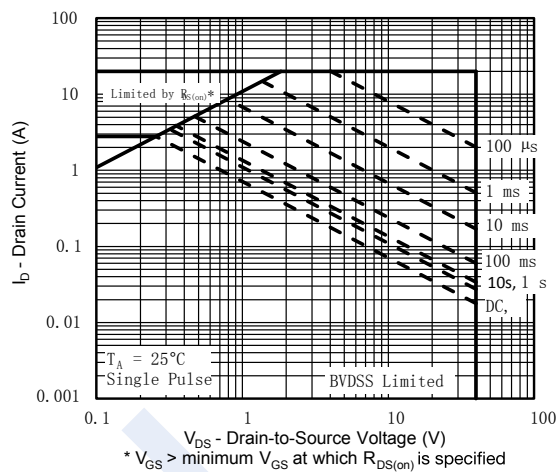
On-Resistance vs. Gate-to-Source Voltage



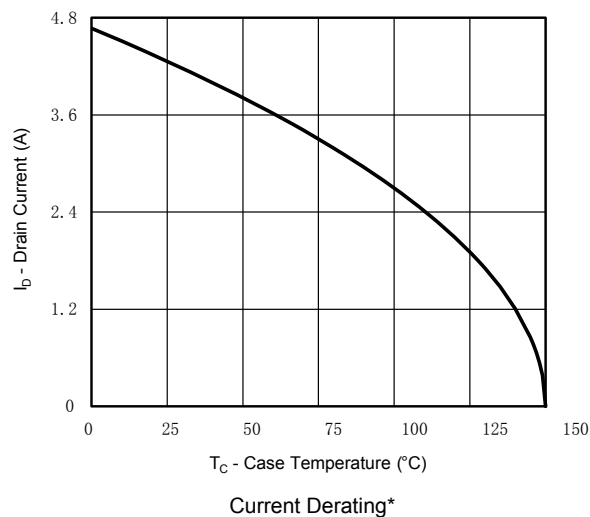
Threshold Voltage



Single Pulse Power (Junction-to-Ambient)



Safe Operating Area, Junction-to-Ambient

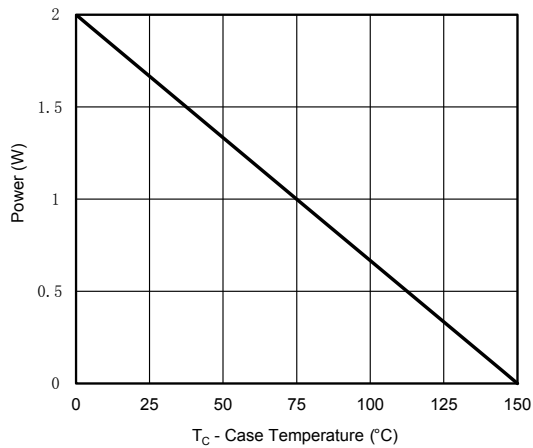


Current Derating*

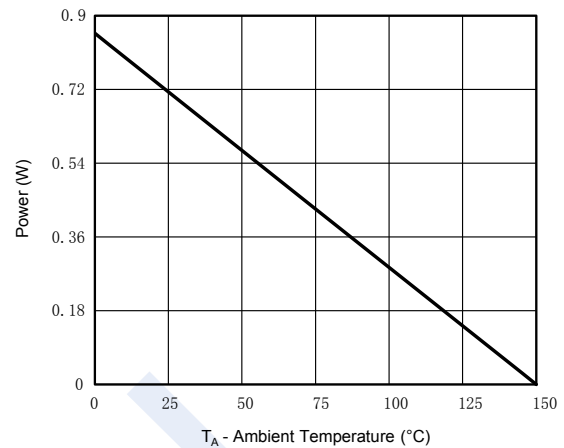
N-Channel MOSFET

SI2356DS (KI2356DS)

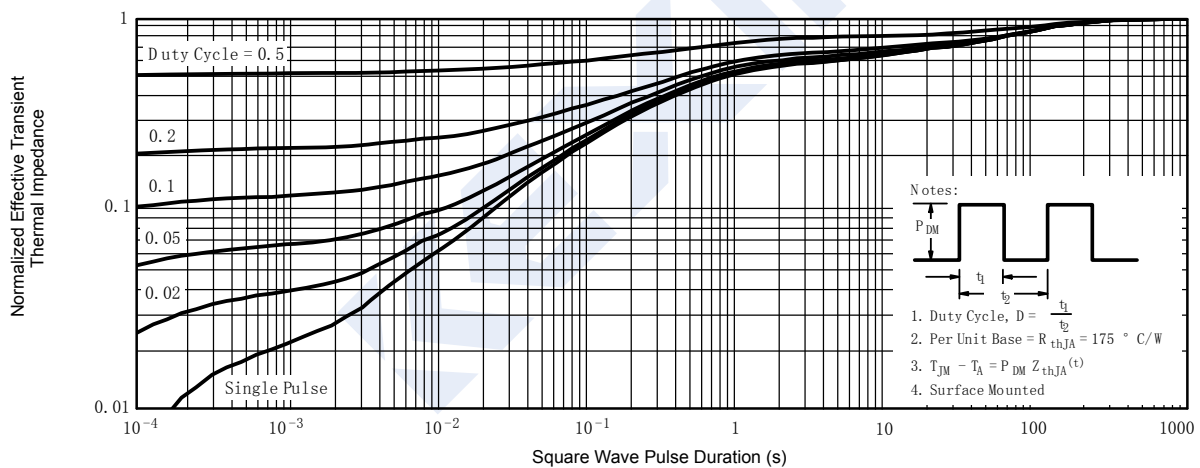
Typical Characteristics



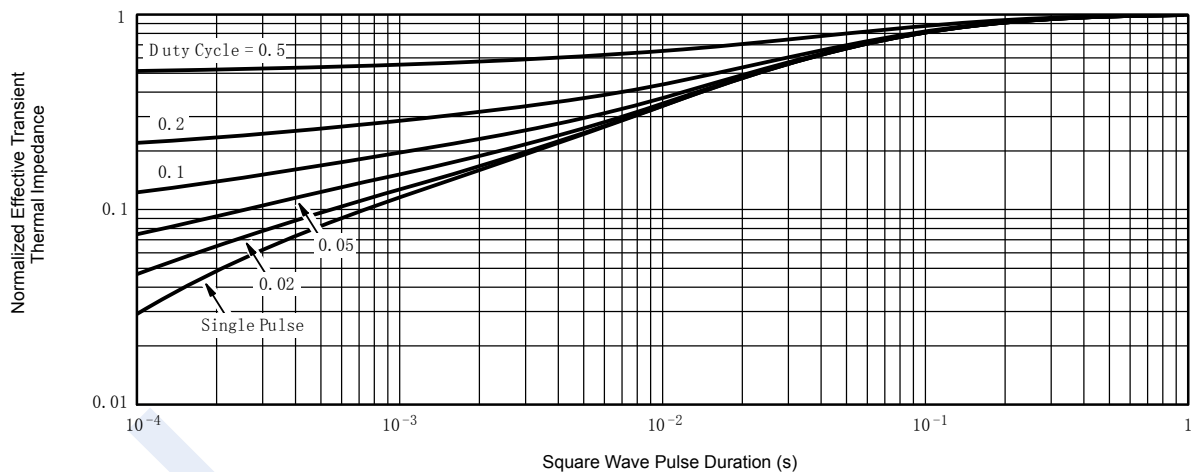
Power Junction-to-Foot



Power Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot