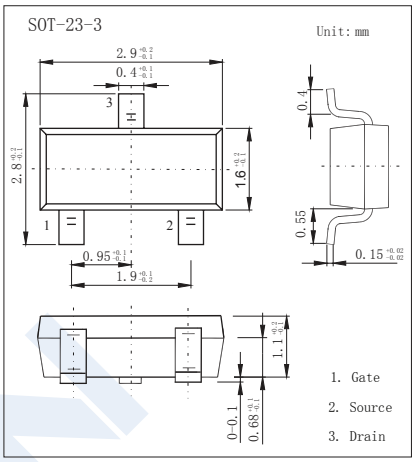
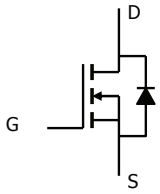
N-Channel 30-V (D-S) MOSFET

SI2306 (KI2306)



■ Features

- V_{DS} (V) = 30V
- $R_{DS(ON)}$ < 57mΩ (V_{GS} =-10V)
- $R_{DS(ON)}$ < 94 mΩ (V_{GS} =-4.5V)



■ Absolute Maximum Ratings Ta = 25

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current Tj=150℃ *1	Ta=25℃	I_D	3.5	A
	Ta=70℃		2.8	
Pulsed Drain Current		I_{DM}	16	
Power Dissipation *1	Ta=25℃	P_D	1.25	W
	Ta=70℃		0.8	
Thermal Resistance.Junction- to-Ambient	t ≤ 5 sec	R_{thJA}	100	℃/W
	Steady State		130	
Junction Temperature		TJ	150	℃
Storage Temperature Range		Tstg	-55 to 150	

*1.Surface Mounted on FR4 Board,.t ≤ 5 sec

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 uA	30			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 uA	1		3	
Gate-body leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0 V			0.5	uA
		V_{DS} =30V, V_{GS} = 0 V, T_J = 55 ℃			10	
On-state drain current	$I_{D(on)}$	V_{DS} ≥ 4.5 V, V_{GS} = 10 V	6			A
		V_{DS} ≥ 4.5 V, V_{GS} = 4.5 V	4			
Drain-source on-state resistance	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 3.5 A		0.046	0.057	Ω
		V_{GS} =4.5 V, I_D =2.8 A		0.070	0.094	
Forward transconductance	g_{fs}	V_{DS} =4.5 V, I_D = 3.5 A		6.9		S
Diode forward voltage	V_{SD}	I_S = 1.25 A, V_{GS} = 0 V		0.8	1.2	V
gate charge *	Q_g	V_{DS} = 15V ,V_{GS} =5V , I_D= 3.5 A		4.2	7	nC
Total gate charge *	Q_{gt}	V_{DS} = 15V ,V_{GS} = 10 V , I_D= 3.5 A		8.5	20	nC
Gate-source charge *	Q_{gs}			1.9		
Gate-drain charge *	Q_{gd}			1.35		
Gate Resistance	Rg		0.5		2.4	Ω
Input capacitance *	C_{iss}	V_{DS} = 15V ,V_{GS} = 0 , f = 1 MHz		555		pF
Output capacitance *	C_{oss}			120		
Reverse transfer capacitance *	C_{rss}			60		
Turn-on time	$t_{d(on)}$	V_{DD} = 15V , R_L = 15 Ω, I_D = 1A , V_{GEN} =-10V , R_G = 6Ω		9	20	ns
	t_r			7.5	18	
Turn-off time	$t_{d(off)}$			17	35	
	t_f			5.2	12	

* Pulse test: PW ≤ 300 us duty cycle ≤ 2%.

■ Marking

Marking	A6SHB

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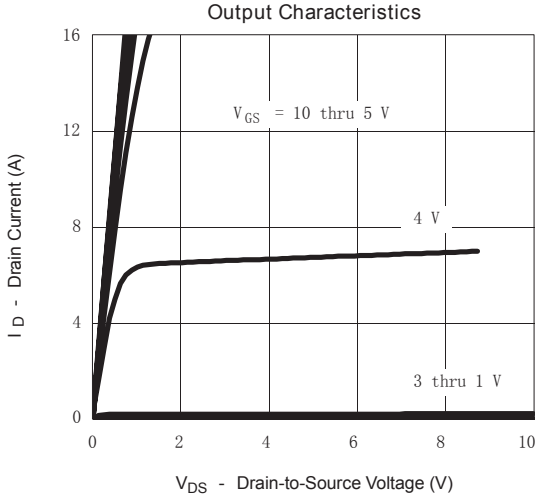
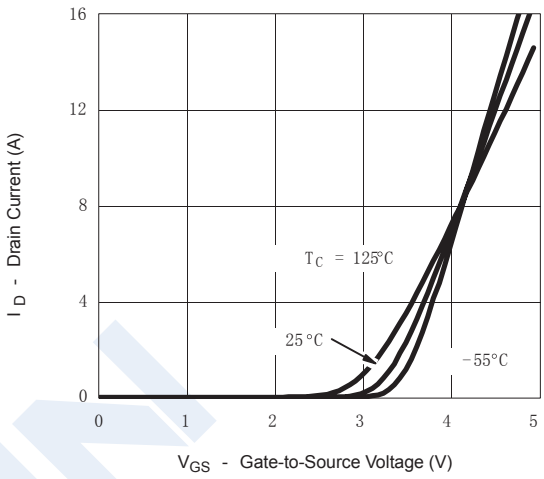
■ Typical Characteristics

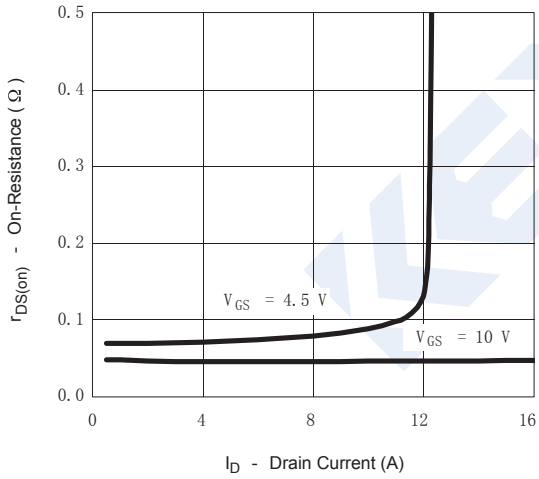
Output Characteristics



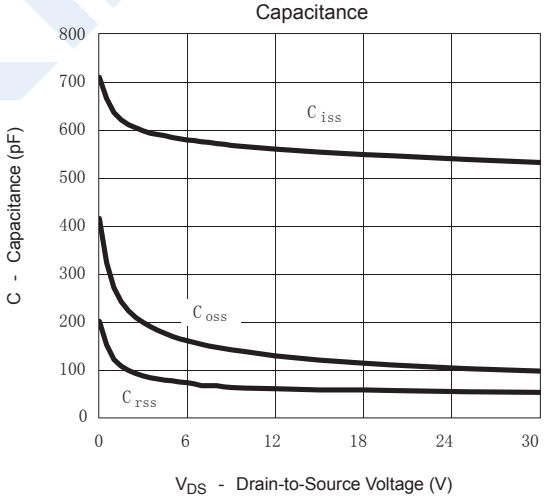
Transfer Characteristics



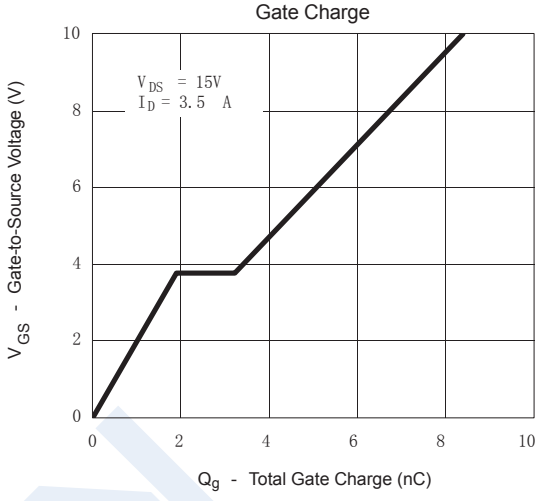
On-Resistance vs. Drain Current



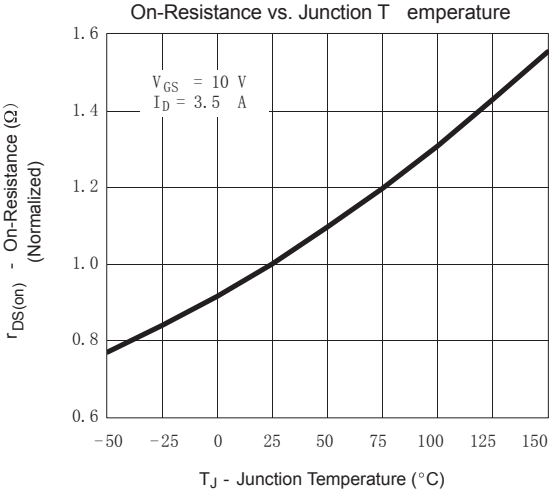
Capacitance



Gate Charge



On-Resistance vs. Junction T emperature



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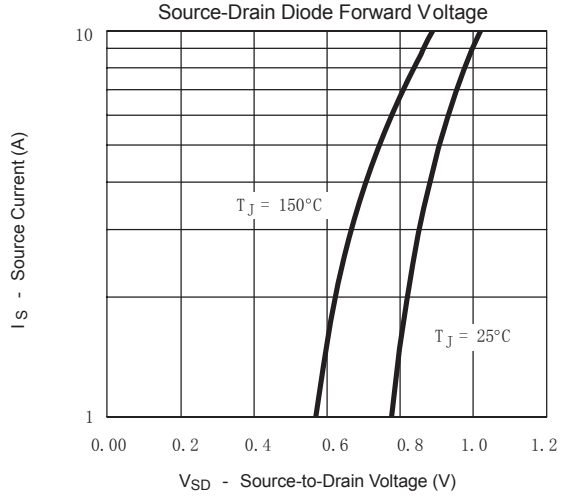
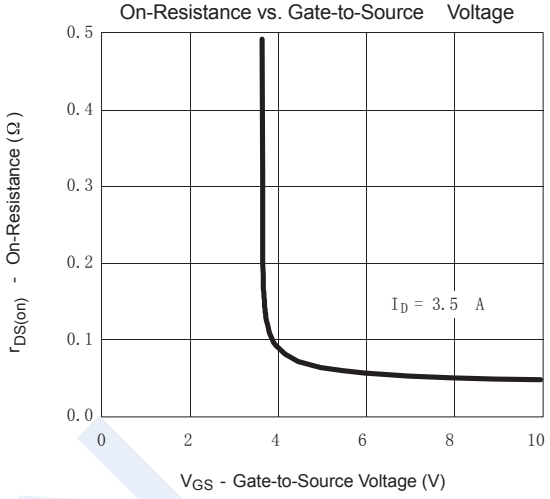
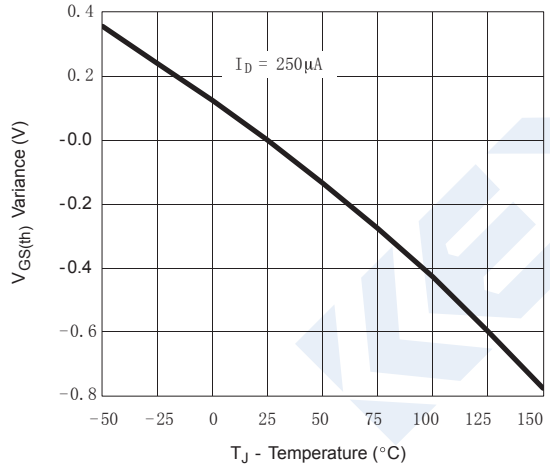
Source-Drain Diode Forward Voltage



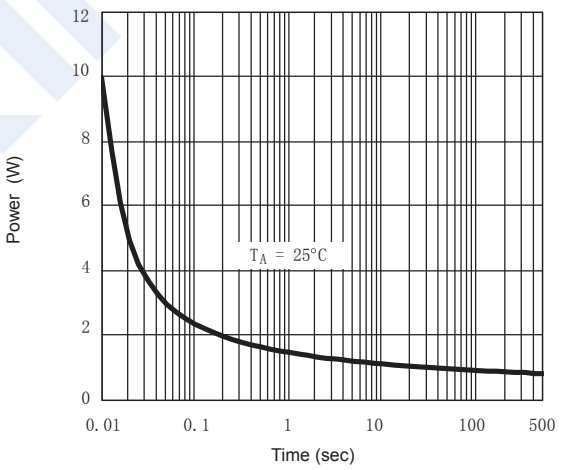
On-Resistance vs. Gate-to-Source Voltage



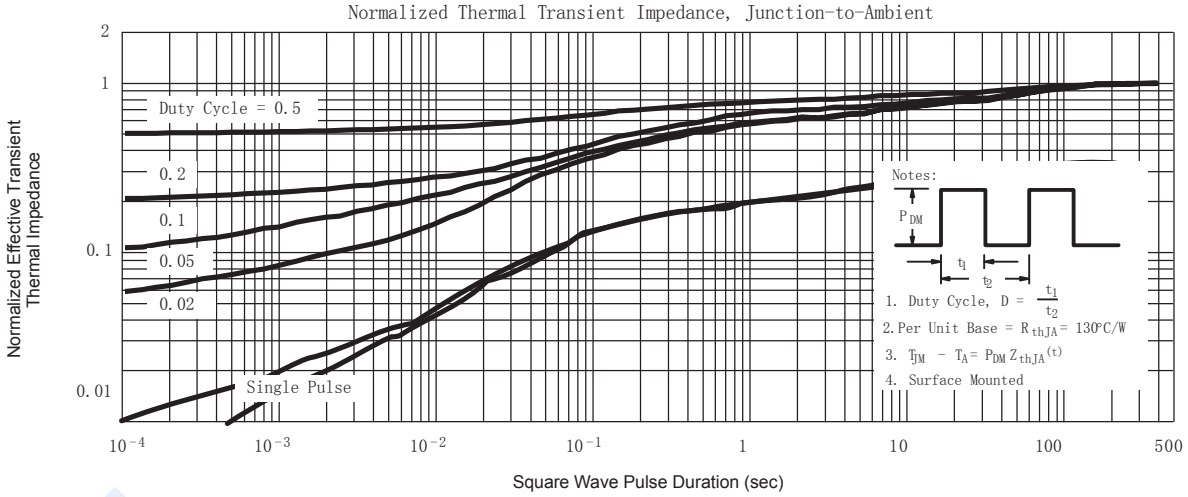
Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



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