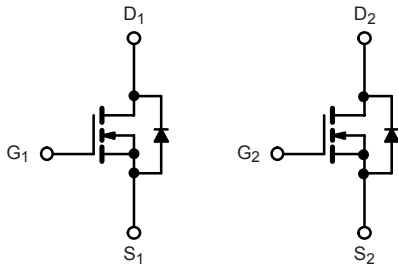
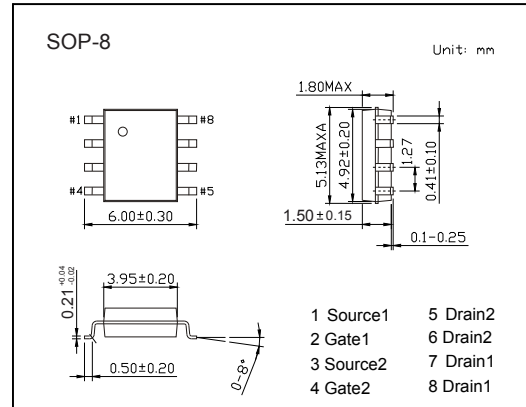


## Dual N-Channel MOSFET

### SI4946DY (KI4946DY)

#### ■ Features

- $V_{DS} (V) = 60V$
- $I_D = 6.5 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 41m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 52m\Omega (V_{GS} = 4.5V)$
- 175 °C Maximum Junction Temperature



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

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	60	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Continuous Drain Current	$I_D$	$T_c=25^\circ C$	A	
		$T_c=70^\circ C$		
		$T_a=25^\circ C$		
		$T_a=70^\circ C$		
Pulsed Drain Current	$I_{DM}$	30		
Avalanche Current	$L = 0.1mH$	$I_{AS}$	12	
Single-Pulse Avalanche Energy		$E_{AS}$	7.2	mJ
Power Dissipation	$P_D$	$T_c=25^\circ C$	W	
		$T_c=70^\circ C$		
		$T_a=25^\circ C$		
		$T_a=70^\circ C$		
Thermal Resistance.Junction- to-Ambient	$t \leq 10 s$	$R_{thJA}$	62.5	$^\circ C/W$
Thermal Resistance.Junction- to-Case	Steady State	$R_{thJC}$	41	
Junction Temperature	$T_J$	150	$^\circ C$	
Storage Temperature Range	$T_{stg}$	-55 to 150		

## Dual N-Channel MOSFET

### SI4946DY (KI4946DY)

#### ■ 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 μA, V <sub>GS</sub> =0V	60			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V			1	μA
		V <sub>DS</sub> =60V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C			10	
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 μA	1		3	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =5.3A (Note.1)			41	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =4.7A (Note.1)			52	
On State Drain Current	I <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =5V (Note.1)	30			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =5.3A (Note.1)		24		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =30V, f=1MHz		840		pF
Output Capacitance	C <sub>oss</sub>			71		
Reverse Transfer Capacitance	C <sub>rss</sub>			44		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	3.1		9.5	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 5.3 A		17	25	nC
				9.2	12	
Gate Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =5V, I <sub>D</sub> =5.3A		3.3		
Gate Drain Charge	Q <sub>gd</sub>			3.7		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>DD</sub> = 30 V, R <sub>L</sub> = 6.8 Ω I <sub>D</sub> = 4.4 A, V <sub>GEN</sub> = 4.5 V, R <sub>g</sub> = 1 Ω			30	ns
Turn-On Rise Time	t <sub>r</sub>				180	
Turn-Off DelayTime	t <sub>d(off)</sub>				30	
Turn-Off Fall Time	t <sub>f</sub>			45		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>DD</sub> = 30 V, R <sub>L</sub> = 6.8 Ω I <sub>D</sub> = 4.4 A, V <sub>GEN</sub> = 10 V, R <sub>g</sub> = 1 Ω			15	ns
Turn-On Rise Time	t <sub>r</sub>				20	
Turn-Off DelayTime	t <sub>d(off)</sub>				40	
Turn-Off Fall Time	t <sub>f</sub>				15	
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 4.4 A, di/dt = 100A/μs, T <sub>J</sub> = 25°C			50	nC
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>				50	
Reverse Recovery Fall Time	t <sub>a</sub>			18		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			3.1	A
Pulse Diode Forward Current	I <sub>SM</sub>	(Note.1)			30	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =2A, V <sub>GS</sub> =0V (Note.1)			1.2	V

Note.1: Pulse test; pulse width ≤ 300 us, duty cycle ≤ 2 %.

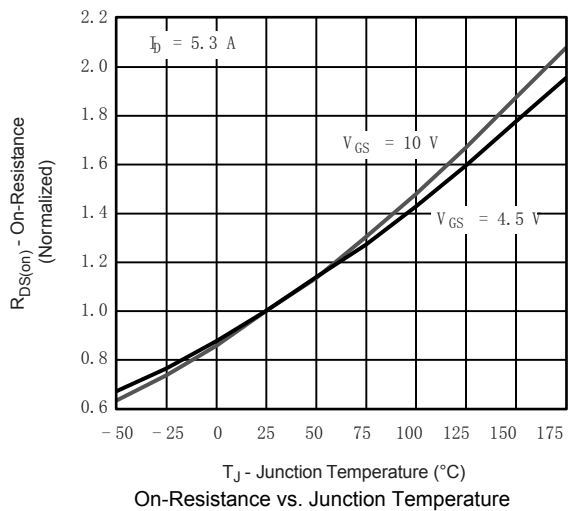
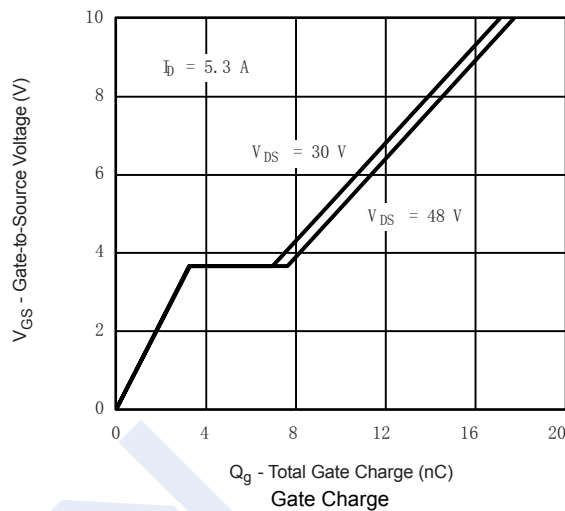
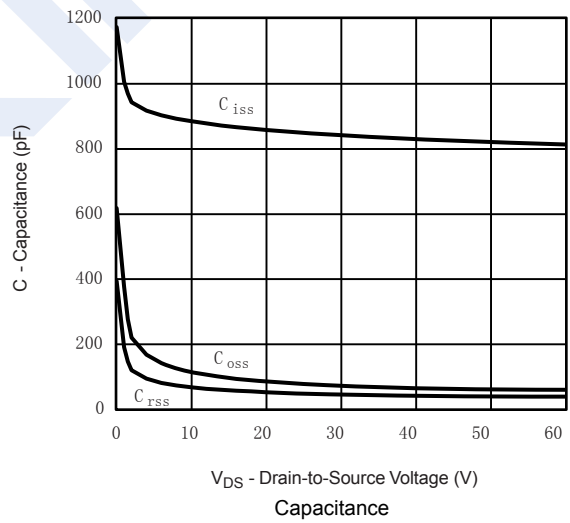
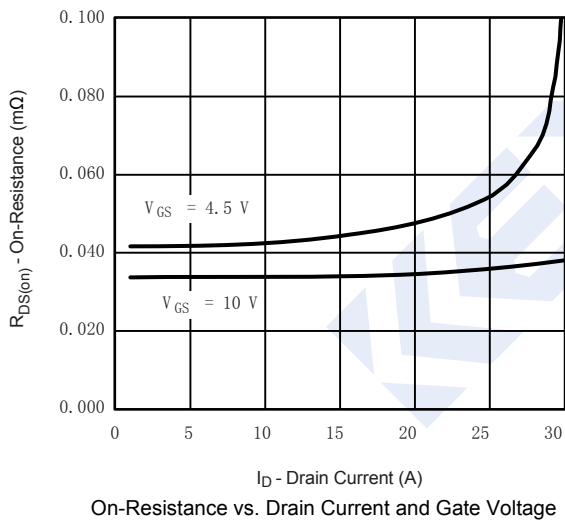
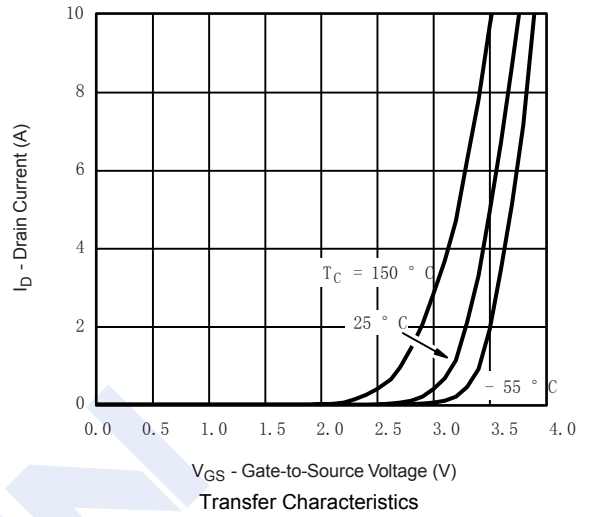
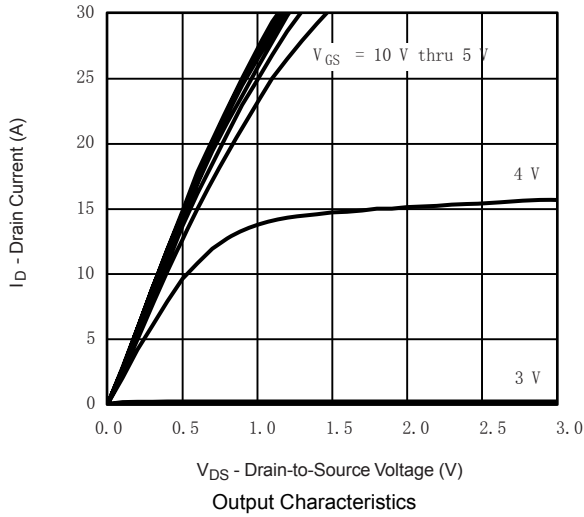
#### ■ Marking

Marking	4946 KA****
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### Dual N-Channel MOSFET

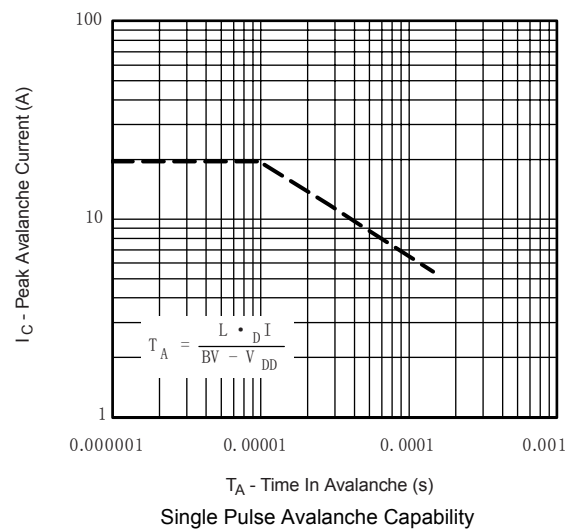
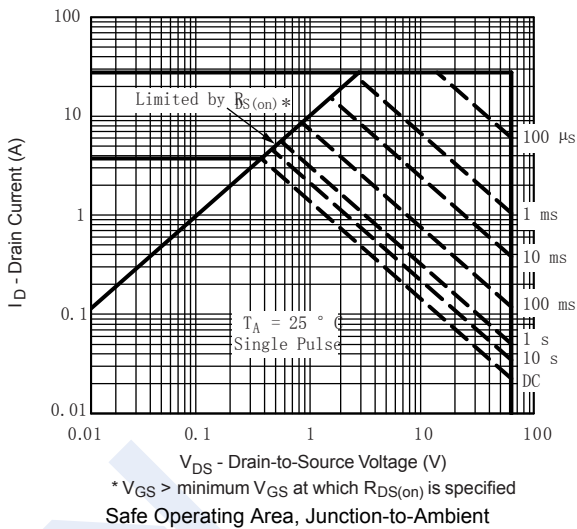
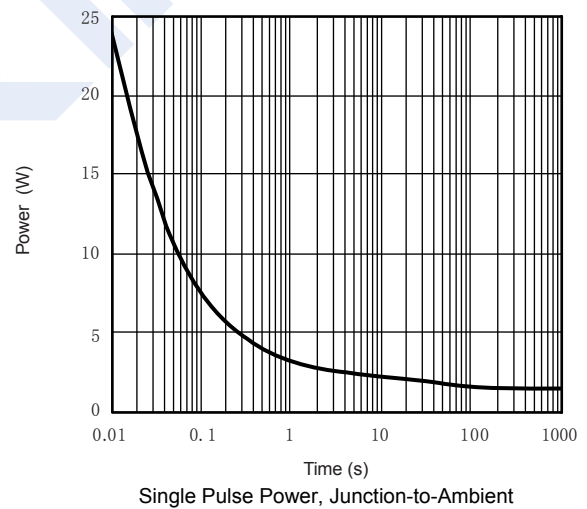
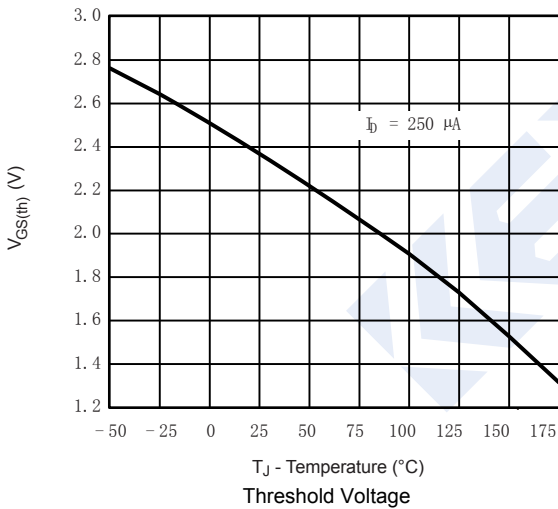
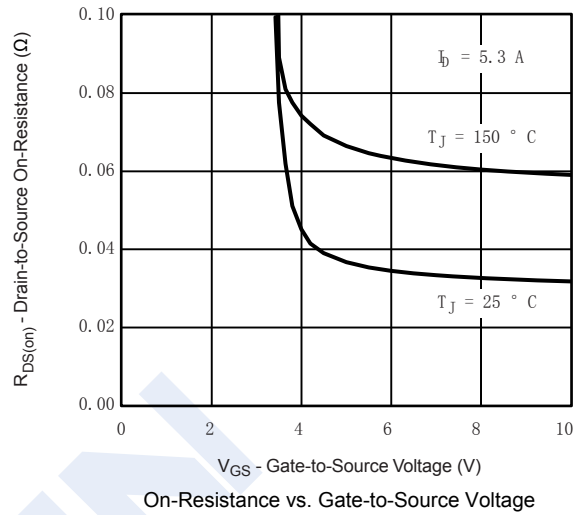
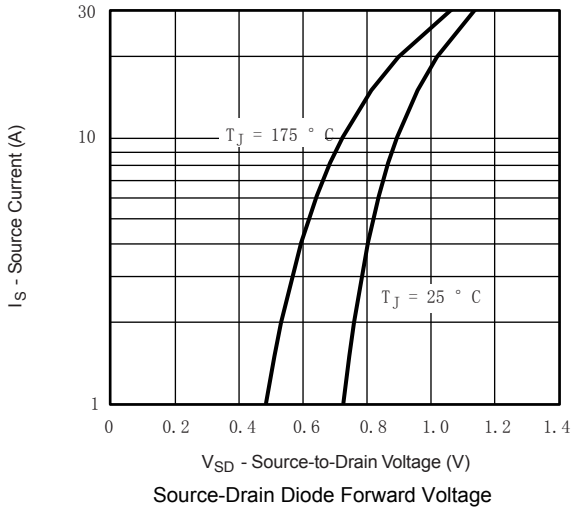
### SI4946DY (KI4946DY)

■ Typical Characteristics



## Dual N-Channel MOSFET SI4946DY (KI4946DY)

### Typical Characteristics



## Dual N-Channel MOSFET SI4946DY (KI4946DY)

■ Typical Characteristics

