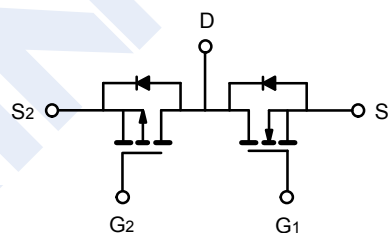
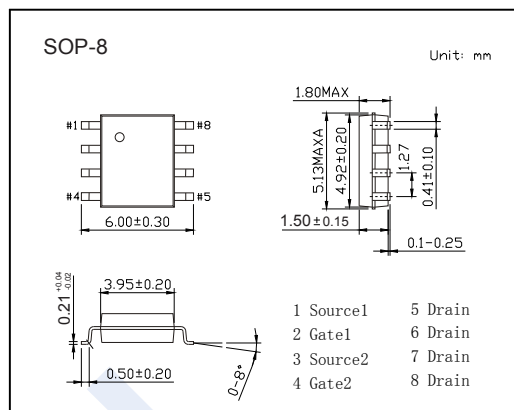


Complementary Power Trench MOSFET

SI4558DY (KI4558DY)

■ Features

- N-Channel: $V_{DS}=30V$ $I_D=6A$
- $R_{DS(ON)} < 40m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 60m\Omega$ ($V_{GS} = 4.5V$)
- P-Channel: $V_{DS}=-30V$ $I_D=-6A$
- $R_{DS(ON)} < 40m\Omega$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 70m\Omega$ ($V_{GS} = -4.5V$)

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

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V _{DS}	30	-30	V
Gate-Source Voltage		V _{GS}	±20		
Continuous Drain Current @ T _J =150℃ (Note.1)	Ta = 25 ℃	I _D	6	-6	A
	Ta = 70 ℃		4.7	-4.7	
Pulsed Drain Current		I _{DM}	30	-30	
Power Dissipation	Ta = 25 ℃	P _D	2.4		W
	Ta = 70 ℃		1.5		
Thermal Resistance.Junction- to-Ambient (Note.1)		R _{thJA}	52		℃/W
Junction Temperature		T _J	150		℃
Storage Temperature Range		T _{stg}	-55 to 150		

Note.1:Surface Mounted on FR4 Board, $t \leq 10$ sec.

■ Marking

Marking	4558 KA****
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Complementary Power Trench MOSFET

SI4558DY (KI4558DY)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Type	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μ A, V _{GS} =0V	N-CH	30			V
		I _D =-250 μ A, V _{GS} =0V	P-CH	-30			
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	N-CH			1	μ A
		V _{DS} =-30V, V _{GS} =0V	P-CH			-1	
		V _{DS} =24V, V _{GS} =0V, T _J =70℃	N-CH			5	
		V _{DS} =-24V, V _{GS} =0V, T _J =70℃	P-CH			-5	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =± 20V				± 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μ A	N-CH	1			V
		V _{DS} =V _{GS} , I _D =-250 μ A	P-CH	-1			
Static Drain-Source On-Resistance (Note.1)	R _{DS(on)}	V _{GS} =10V, I _D =6A	N-CH		32	40	m Ω
		V _{GS} =4.5V, I _D =4.8A			45	60	
		V _{GS} =-10V, I _D =-6A	P-CH		32	40	
		V _{GS} =-4.5V, I _D =-4.4A			56	70	
On-State drain Current (Note.1)	I _{D(on)}	V _{DS} =5V, V _{GS} =10V	N-CH	30			A
		V _{DS} =-5V, V _{GS} =-10V	P-CH	-30			
		V _{DS} =5V, V _{GS} =4.5V	N-CH	8			
		V _{DS} =-5V, V _{GS} =-4.5V	P-CH	-8			
Forward Transconductance (Note.1)	g _{FS}	V _{DS} =15V, I _D =6A	N-CH		13		S
		V _{DS} =-15V, I _D =-6A	P-CH		10.6		
Total Gate Charge	Q _g	N-Channel: V _{GS} =10V, V _{DS} =15V, I _D =6A P-Channel: V _{GS} =-10V, V _{DS} =-15V, I _D =-6A	N-CH		16	30	nC
Gate Source Charge	Q _{gs}		P-CH		22	35	
			N-CH		3.4		
Gate Drain Charge	Q _{gd}		P-CH		5.4		
			N-CH		2.3		
			P-CH		3.6		
Turn-On DelayTime	t _{d(on)}	N-Channel: V _{GS} =10V, V _{DS} =15V, I _D =1A, R _G =6Ω R _L =15Ω P-Channel: V _{GS} =-10V, V _{DS} =-15V, I _D =-1A, R _G =6Ω R _L =15Ω	N-CH		12	25	ns
Turn-On Rise Time	t _r		P-CH		12	25	
			N-CH		12	25	
Turn-Off DelayTime	t _{d(off)}		P-CH		12	25	
			N-CH		27	55	
Turn-Off Fall Time	t _f		P-CH		38	55	
			N-CH		24	50	
			P-CH		25	50	
Body Diode Reverse Recovery Time	t _{rr}	I _F =2A, di/dt=100A/ μ s	N-CH		45	80	
		I _F =-2A, di/dt=100A/ μ s	P-CH		50	80	
Maximum Body-Diode Continuous Current	I _S		N-CH			2	A
			P-CH			-2	
Diode Forward Voltage (Note.1)	V _{SD}	I _S =2A, V _{GS} =0V	N-CH		0.77	1.2	V
		I _S =-2A, V _{GS} =0V	P-CH		-0.77	-1.2	

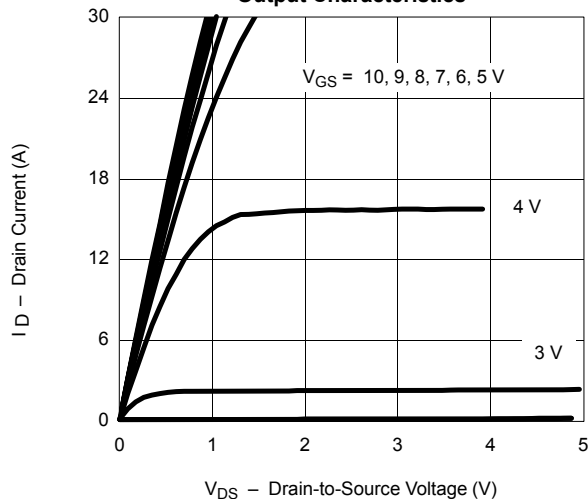
Note.1: Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

Complementary Power Trench MOSFET

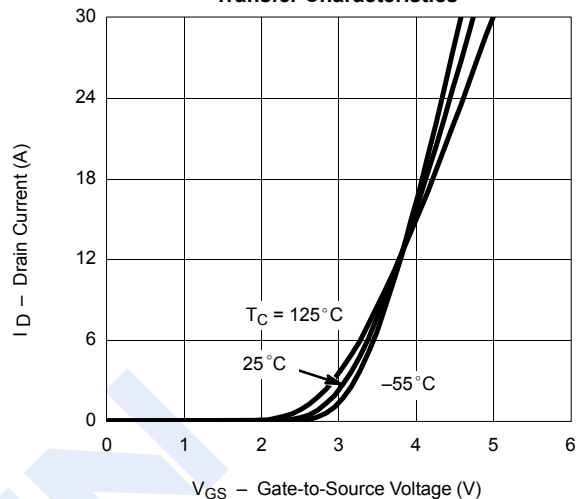
SI4558DY (KI4558DY)

■ N-MOSFET Typical Characteristics

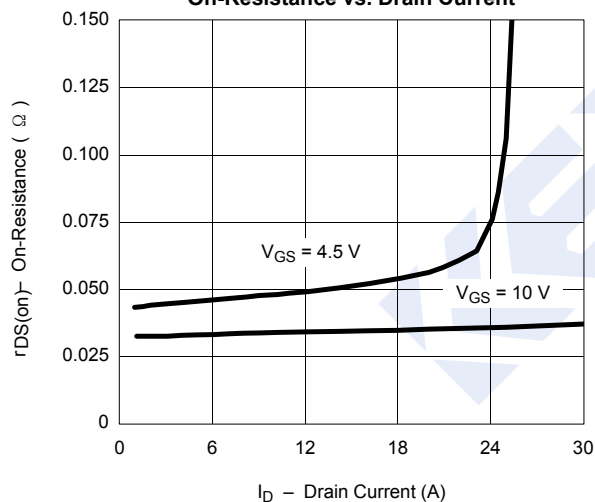
Output Characteristics



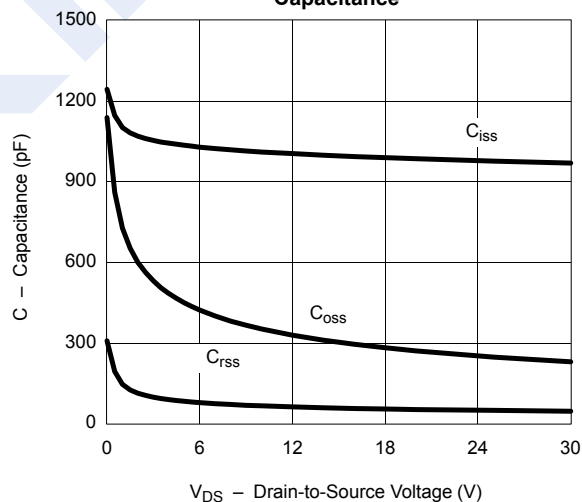
Transfer Characteristics



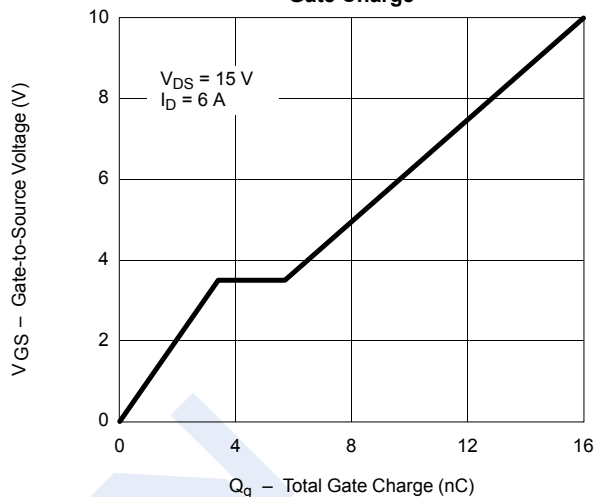
On-Resistance vs. Drain Current



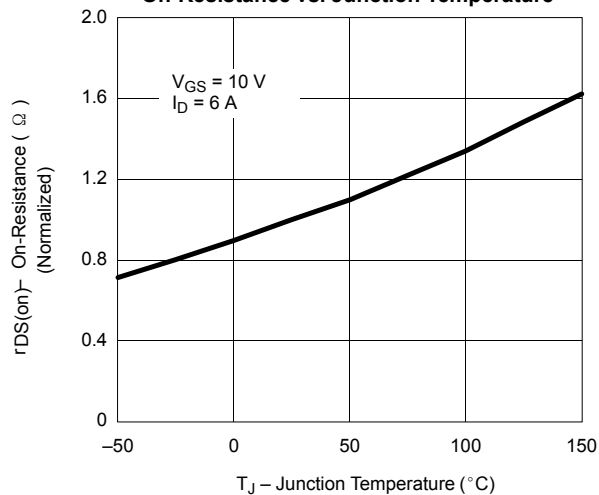
Capacitance



Gate Charge



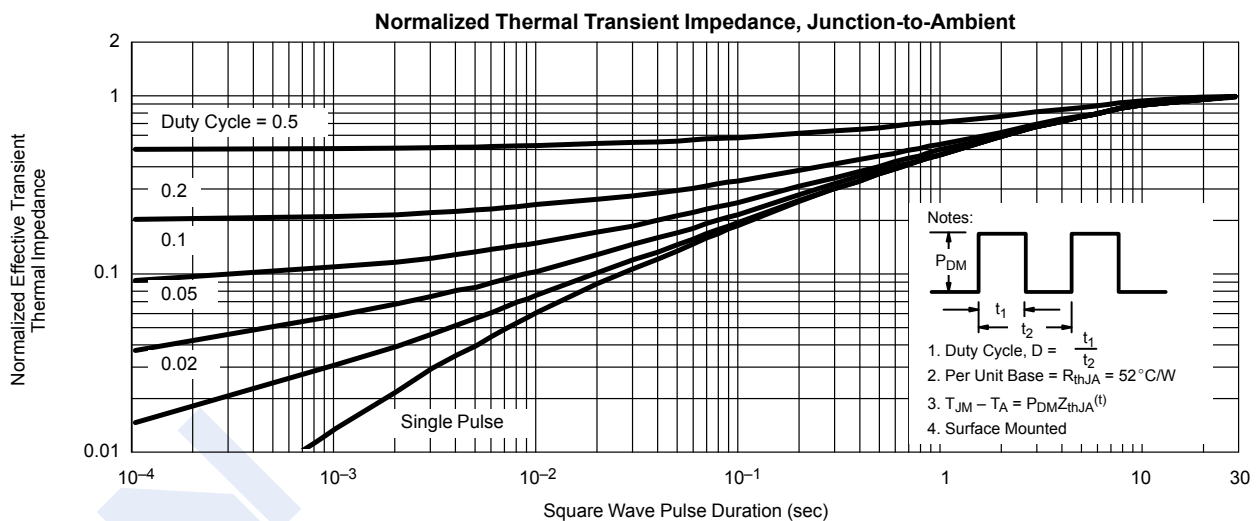
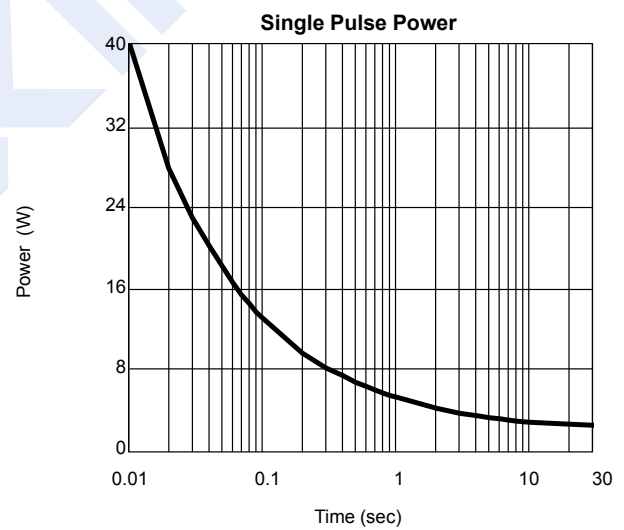
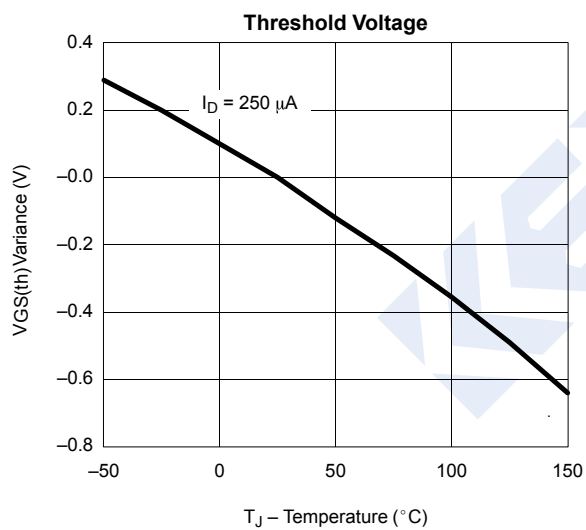
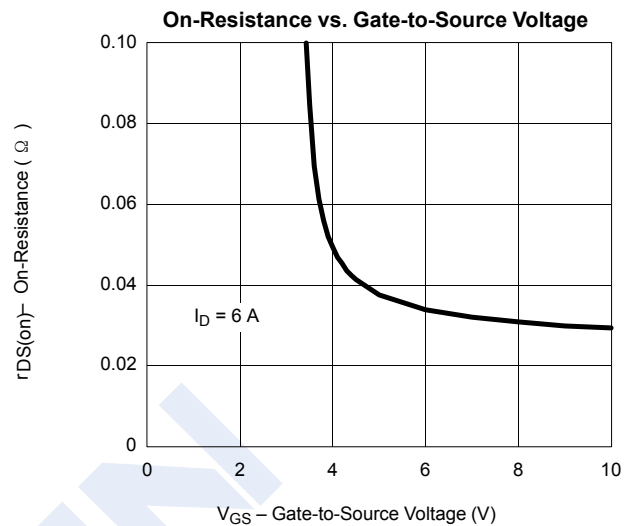
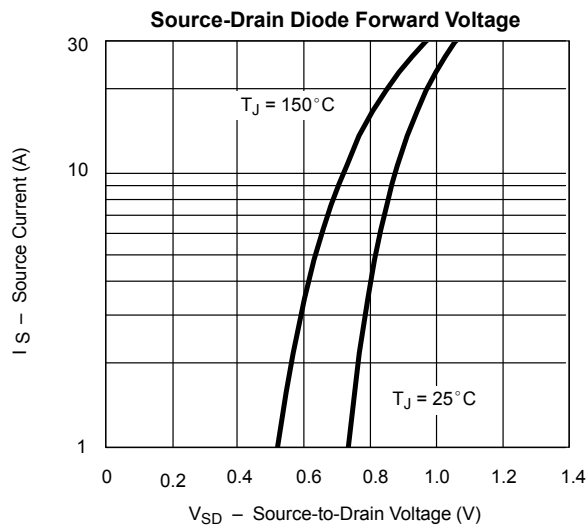
On-Resistance vs. Junction Temperature



Complementary Power Trench MOSFET

SI4558DY (KI4558DY)

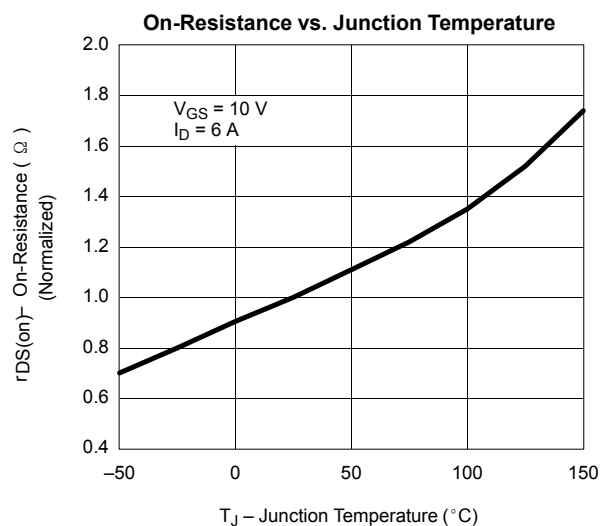
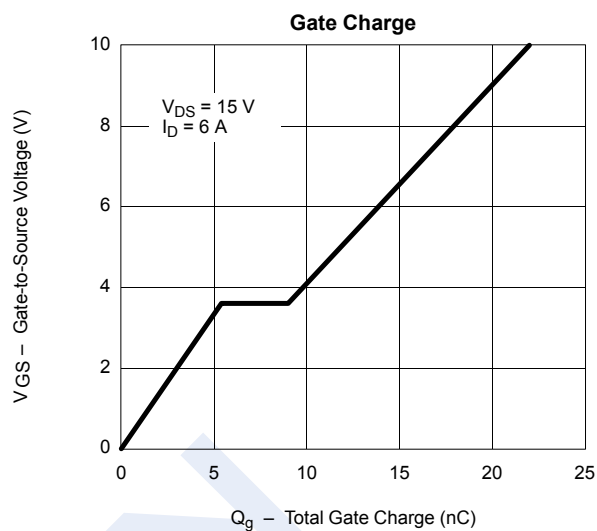
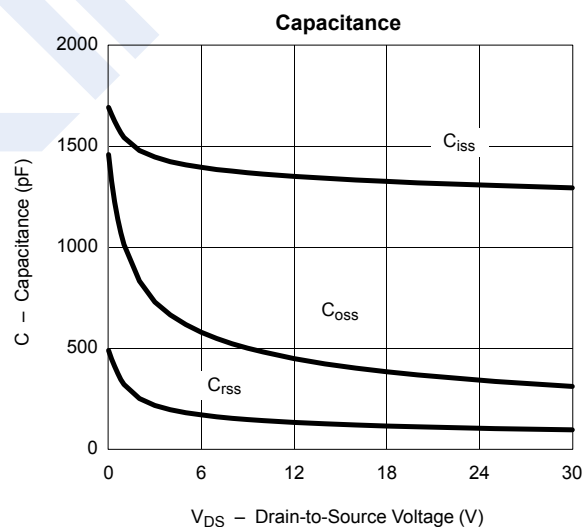
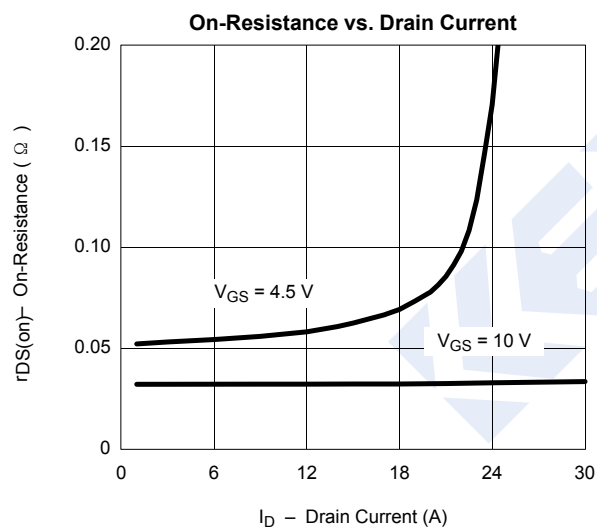
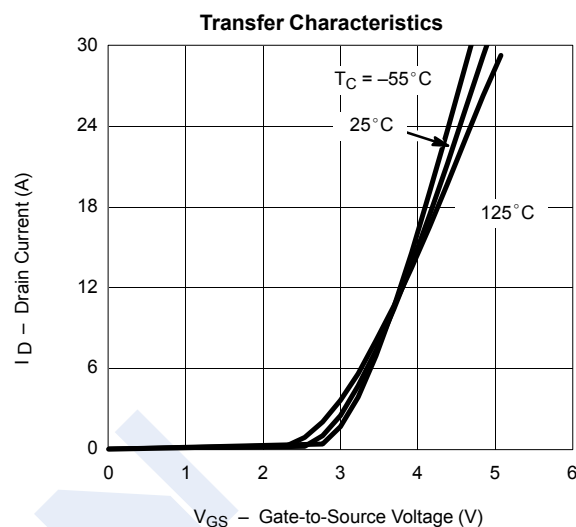
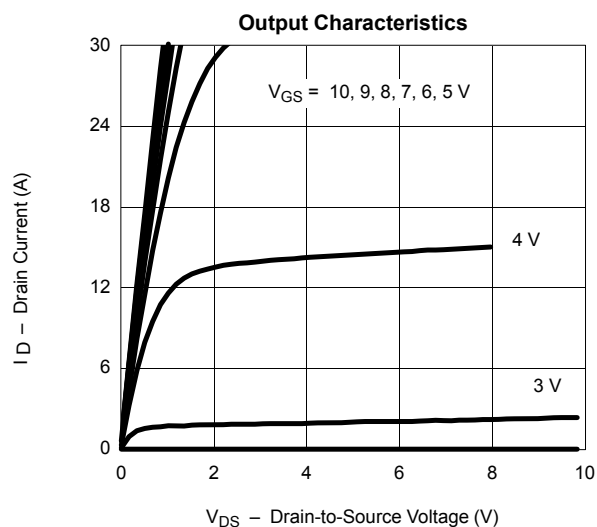
■ N-MOSFET Typical Characteristics



Complementary Power Trench MOSFET

SI4558DY (KI4558DY)

■ P-MOSFET Typical Characteristics



Complementary Power Trench MOSFET

SI4558DY (KI4558DY)

■ P-MOSFET Typical Characteristics

