

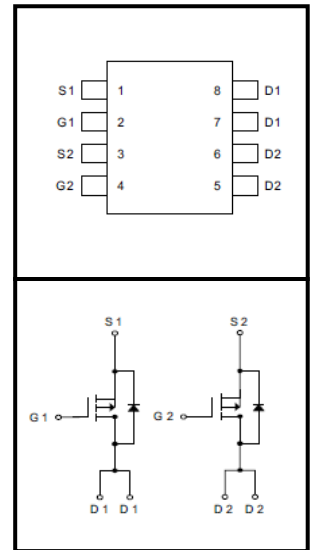
P-Channel Logic Level Enhancement Mode Power MOSFET

FEATURES

- Super Low Gate Charge
- 100% EAS Guaranteed
- RoHS compliant
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

APPLICATIONS

- Load Switch
- Power Management
- Pulse Width Modulation(PWM)



Device Marking and Package Information

Device	Package	Marking
CTS03PP055	Sop-8	CTS03PP055

Absolute Maximum Ratings at $T_J = 25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS} = 0V$)	V_{DSS}	-30	V
Continuous Drain Current $T_C = 25^\circ\text{C}$ (note1)	I_D	-5.1	A
Continuous Drain Current $T_C = 100^\circ\text{C}$ (note1)		-3.2	
Pulsed Drain Current (note2)	I_{DM}	-21	A
Gate Source Voltage	V_{GSS}	± 20	V
Power Dissipation $T_C = 25^\circ\text{C}$ (note4)	P_D	2.5	W
Single Pulse Avalanche Energy (note3)	E_{AS}	28	mJ
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+175	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient (note1)	$R_{\theta JA}$	58	$^\circ\text{C/W}$

Electrical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} = 0V, T _J = 25°C	--	--	-1	uA
		V _{DS} =-30V, V _{GS} = 0V, T _J = 100°C	--	--	-5	uA
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.4	-2.5	V
Drain-Source On-Resistance (note2)	R _{DS(on)}	V _{GS} = -10V, I _D = -5A	--	43	55	mΩ
		V _{GS} = -4.5V, I _D =-4A	--	65	90	mΩ
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1.0MHz	--	580	--	pF
Output Capacitance	C _{oss}		--	98	--	
Reverse Transfer Capacitance	C _{rss}		--	74	--	
Total Gate Charge (4.5V)	Q _g	V _{DS} =-15V, I _D = -5.1A, V _{GS} = -10V	--	6.8	--	nC
Gate-Source Charge	Q _{gs}		--	1	--	
Gate-Drain Charge	Q _{gd}		--	1.4	--	
Turn-on Delay Time	t _{d(on)}	V _{DS} = -15V, I _D = -1A V _{GS} =-10V,R _G = 2.5Ω, R _L = 15Ω	--	14	--	ns
Turn-on Rise Time	t _r		--	64	--	
Turn-off Delay Time	t _{d(off)}		--	19	--	
Turn-off Fall Time	t _f		--	10	--	
Body Diode Characteristics						
Continuous Body Diode Current	I _S		--	--	-5.1	A
Pulsed Diode Forward Current	I _{SM}		--	--	-20.4	A
Body Diode Voltage	V _{SD}	I _{SD} = -1.7A, V _{GS} = 0V	--	--	-1.2	V

Notes

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is $V_{DD} = 25V, V_{GS} = 10V, L = 0.1mH$
4. The power dissipation is limited by 175°C junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

N-Channel Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

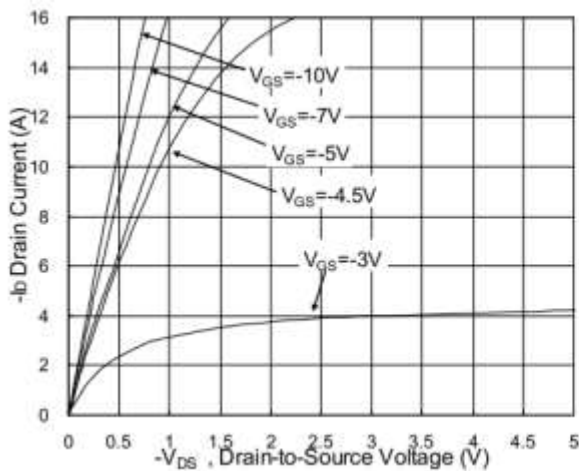


Fig.1 Typical Output Characteristics

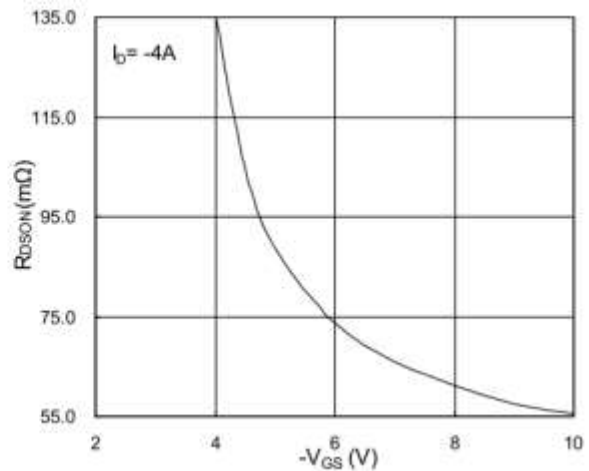


Fig.2 On-Resistance vs. G-S Voltage

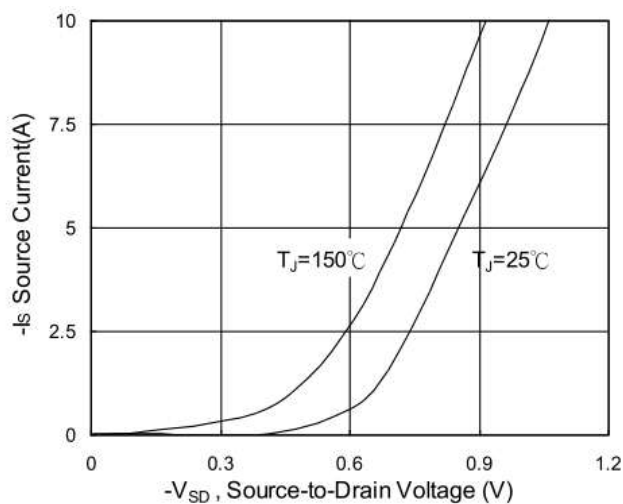


Fig.3 Source Drain Forward Characteristics

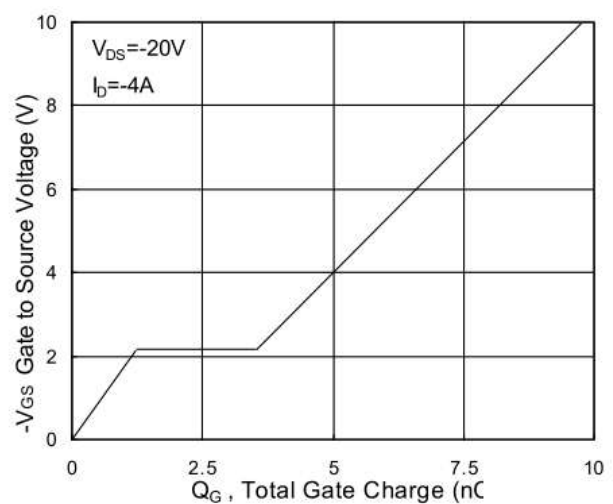


Fig.4 Gate-Charge Characteristics

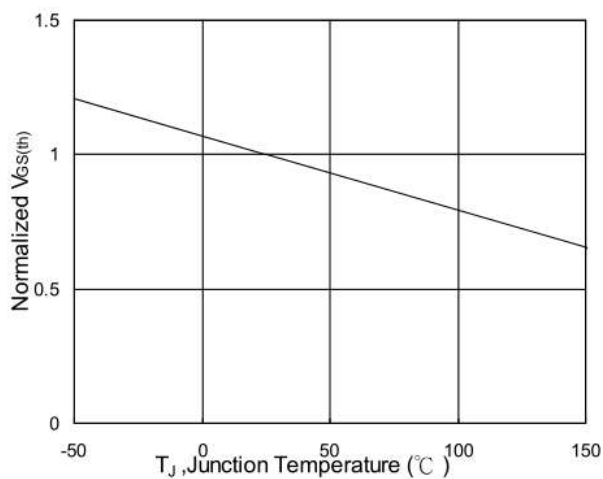


Fig.5 Normalized VGS(th) vs. TJ

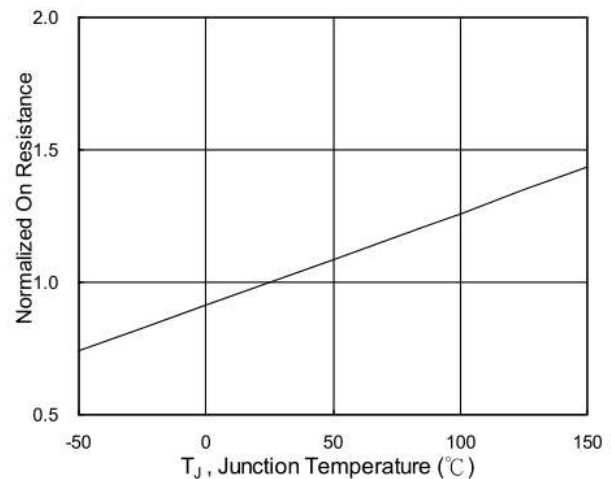


Fig.6 Normalized RDS(on) vs. TJ

N-Channel Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

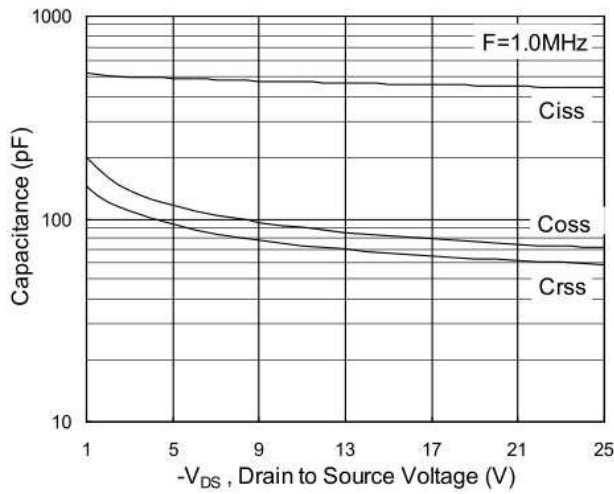


Fig.7 Capacitance

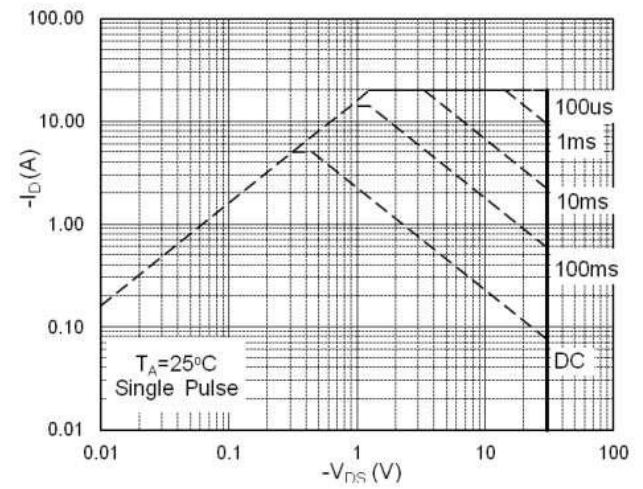


Fig.8 Safe Operating Area

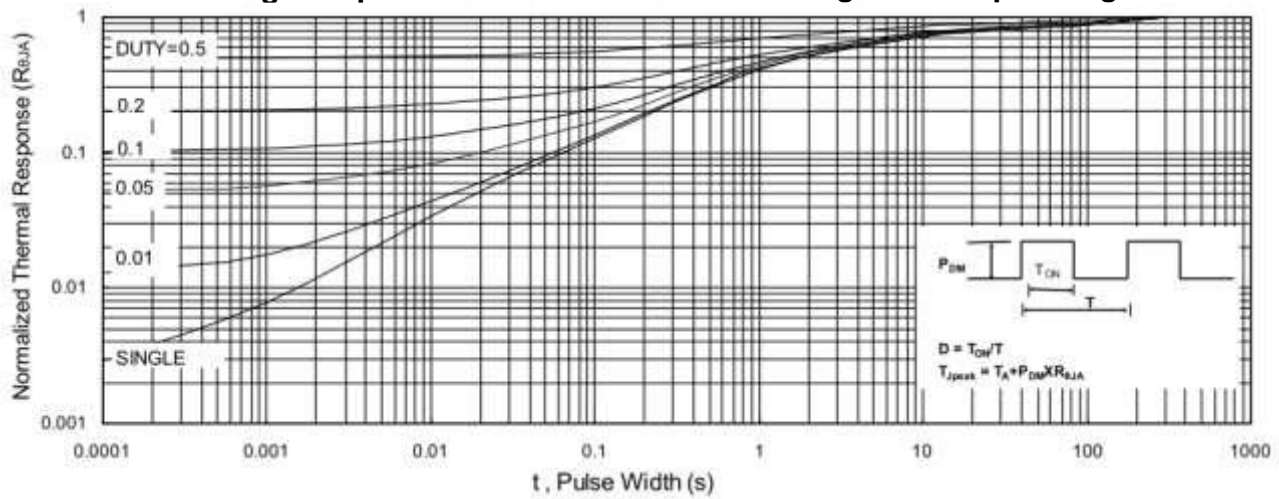
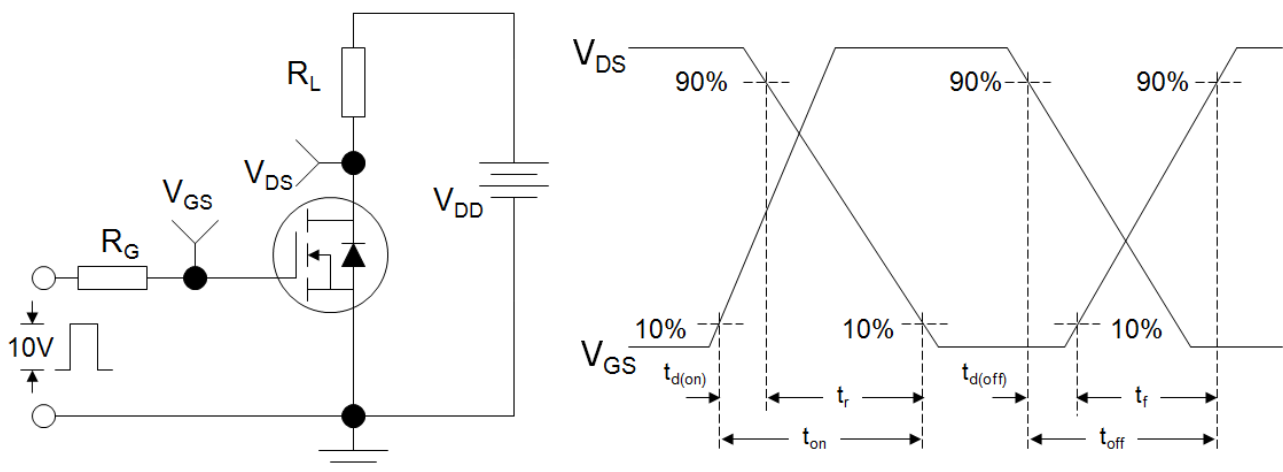
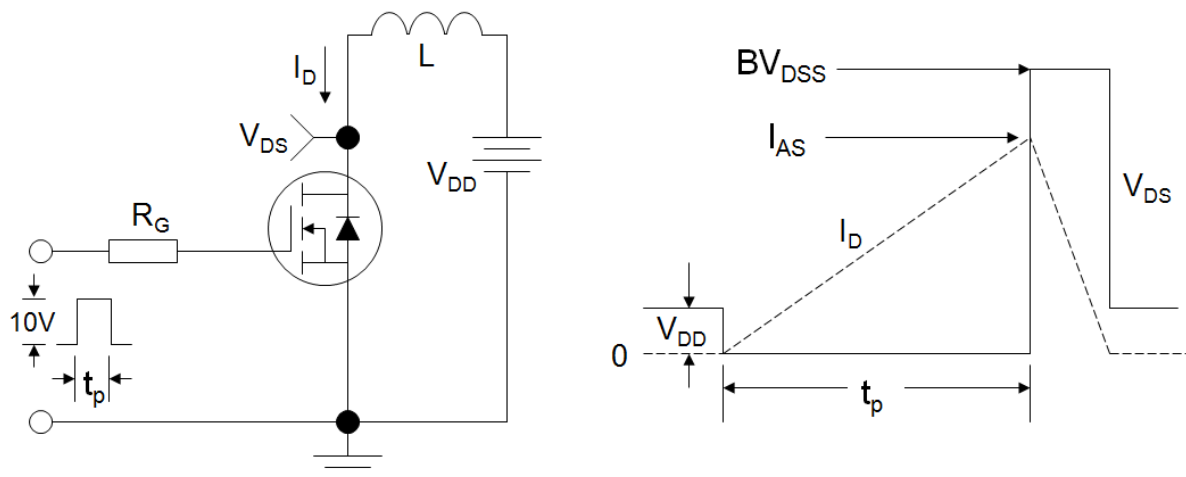
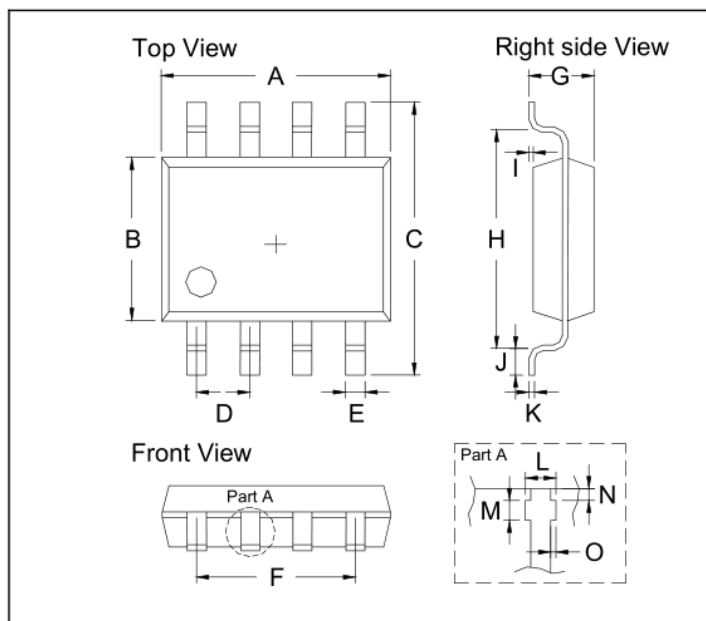


Fig.9 Normalized Maximum Transient Thermal Impedance

Figure A: Gate Charge Test Circuit and Waveform

Figure B: Resistive Switching Test Circuit and Waveform

Figure C: Unclamped Inductive Switching Test Circuit and Waveform


SOP-8



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1909	0.2007	4.85	5.10	I	0.0019	0.0078	0.05	0.20
B	0.1515	0.1555	3.85	3.95	J	0.0118	0.0275	0.30	0.70
C	0.2283	0.2441	5.80	6.20	K	0.0074	0.0098	0.19	0.25
D	0.0480	0.0519	1.22	1.32	L	0.0145	0.0204	0.37	0.52
E	0.0145	0.0185	0.37	0.47	M	0.0118	0.0197	0.30	0.50
F	0.1472	0.1527	3.74	3.88	N	0.0031	0.0051	0.08	0.13
G	0.0570	0.0649	1.45	1.65	O	0.0000	0.0059	0.00	0.15
H	0.1889	0.2007	4.80	5.10					

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