ATT02070E

20V Common-Drain Dual N-Channel MOSFET

Features

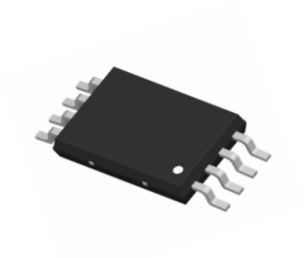
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Green Device Available
- ESD Protected 2KV Embedded

Product Summary

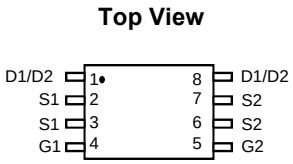
V_{DS}	20	V
I_D	7	A
$R_{DS(ON)}$ (at V_{GS}=4.5V)	18.5	mΩ
$R_{DS(ON)}$ (at V_{GS}=2.5V)	28.5	mΩ

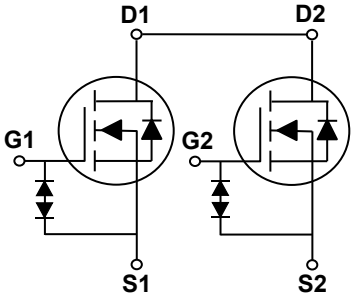
Applications

- Handheld Instruments
- Battery Switch



TSSOP8 Top View





Absolute Maximum Ratings(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[1]	I_D@T_A=25℃	7	A
Continuous Drain Current[1]	I_D@T_A=70℃	5.6	A
Pulsed Drain Current[2]	I_{DM}	28	A
Total Power Dissipation[3]	P_D@T_A=25℃	1.5	W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient[1]	$R_{\theta JA}$	---	85	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	20	---	---	V
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	V_{GS}=4.5V , I_D=3.5A	14	15.5	18.5	mΩ
		V_{GS}=4.0V , I_D=3.5A	14.5	17	19.5	mΩ
		V_{GS}=3.7V , I_D=3.5A	15	17.5	20	mΩ
		V_{GS}=3.1V , I_D=3.5A	16	19.5	23	mΩ
		V_{GS}=2.5V , I_D=3.5A	18	23.5	28.5	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	0.5	---	1.2	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V , V_{DS}=0V	---	---	±100	nA
Forward Transconductance	gfs	V_{DS}=5V , I_D=3.5A	---	20	---	S
Total Gate Charge	Q_g	V_{DS}=15V , V_{GS}=4.5V , I_D=7A	---	11.3	---	nC
Gate-Source Charge	Q_{gs}		---	1.59	---	
Gate-Drain Charge	Q_{gd}		---	2.86	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=10V , V_{GS}=10V , R_G=3.3Ω, I_D=3.5A	---	5	---	ns
Rise Time	T_r		---	33.4	---	
Turn-Off Delay Time	$T_{d(off)}$		---	27	---	
Fall Time	T_f		---	8.8	---	
Input Capacitance	C_{iss}	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	865	---	pF
Output Capacitance	C_{oss}		---	86	---	
Reverse Transfer Capacitance	C_{rss}		---	72	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[1,4]	I_S	V_G=V_D=0V , Force Current	---	---	7	A
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V

Note:

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The power dissipation is limited by 150℃ junction temperature

4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

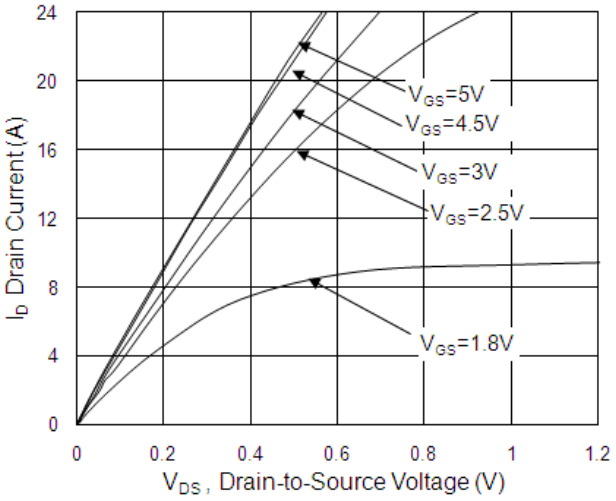


Fig.1 Typical Output Characteristics

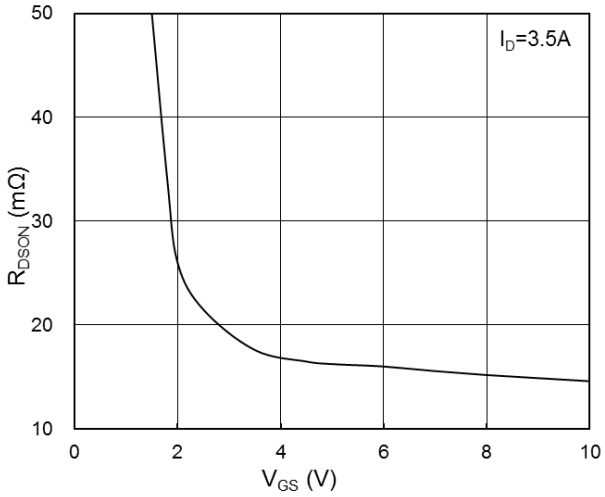


Fig.2 On-Resistance vs. Gate-Source Voltage

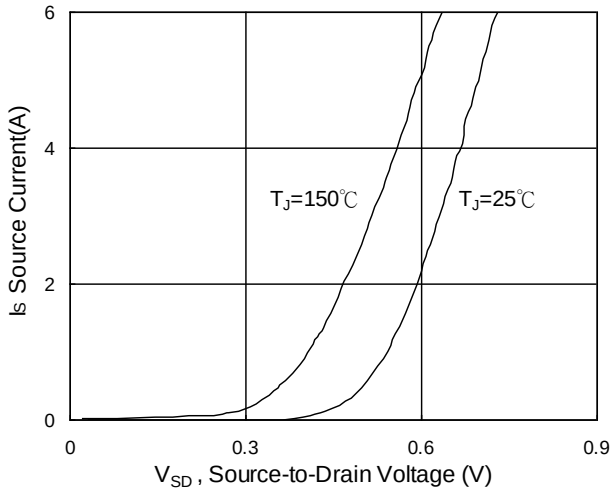


Fig.3 Forward Characteristics of Reverse

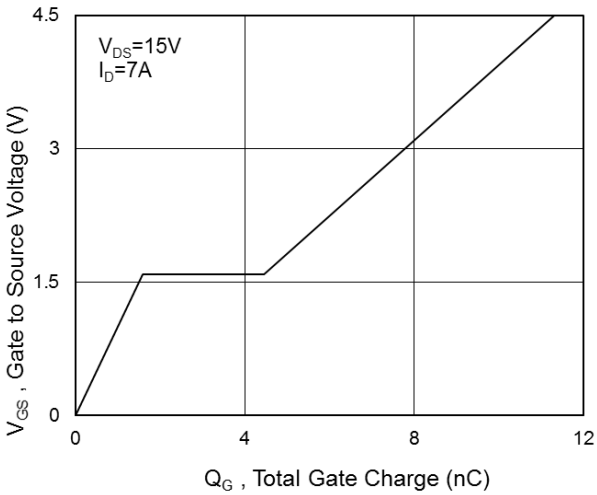


Fig.4 Gate-Charge Characteristics

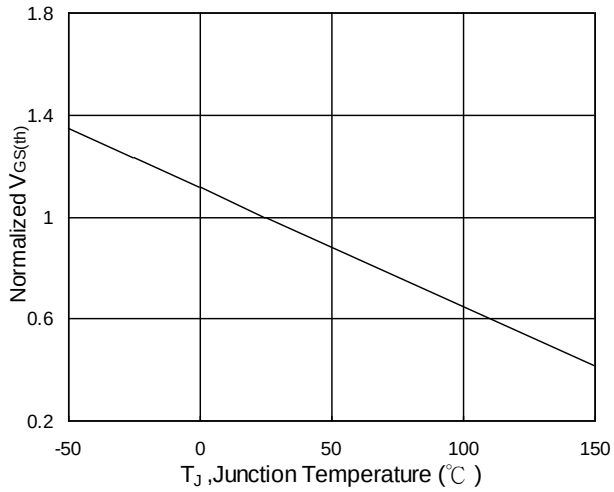


Fig.5 $V_{GS(th)}$ vs. T_J

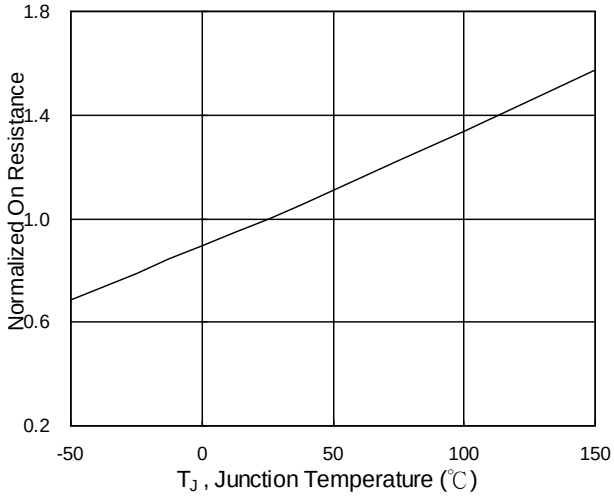


Fig.6 Normalized R_{DSON} vs. T_J

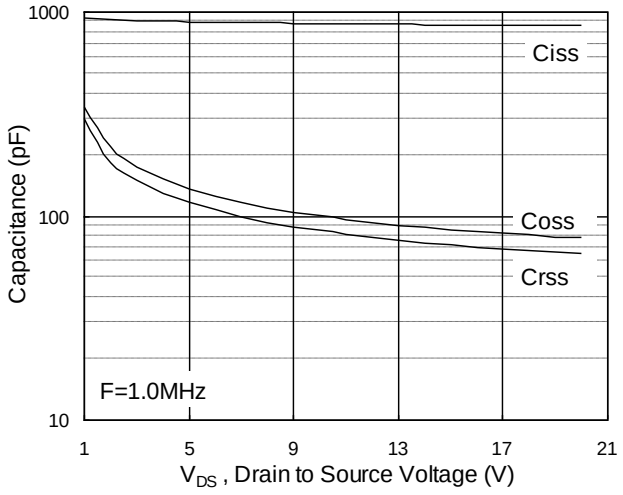


Fig.7 Capacitance

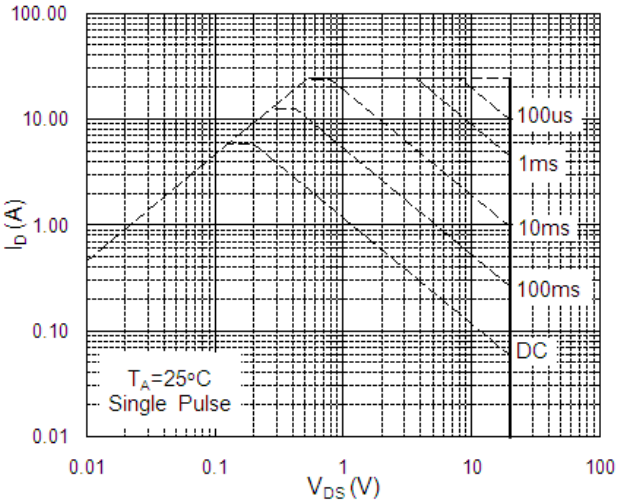


Fig.8 Safe Operating Area

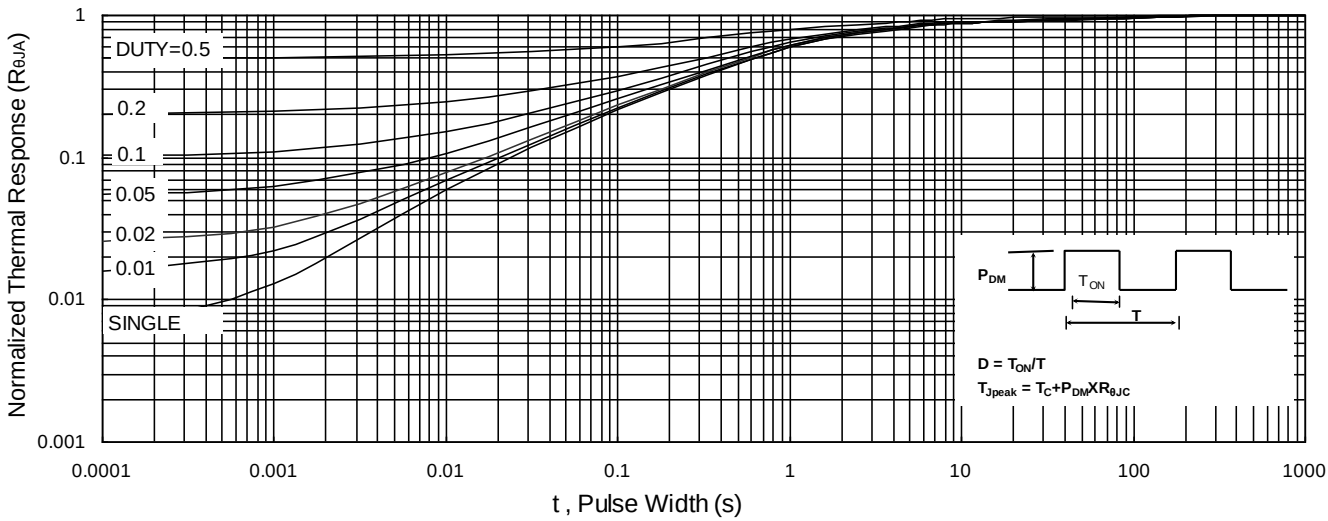


Fig.9 Normalized Maximum Transient Thermal Impedance

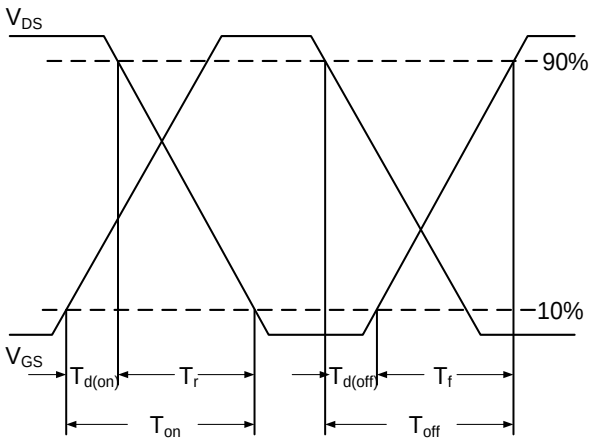


Fig.10 Switching Time Waveform

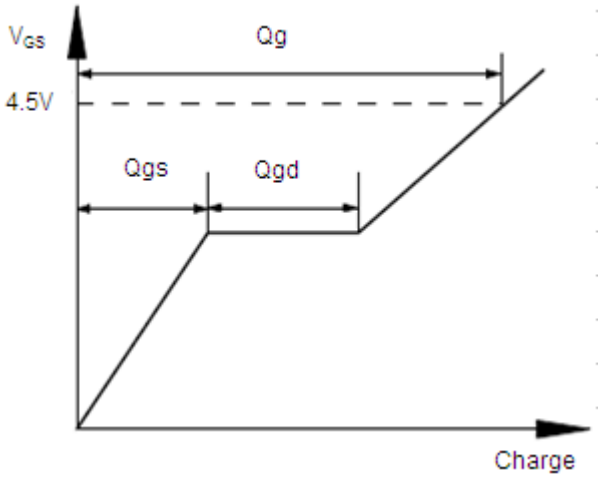
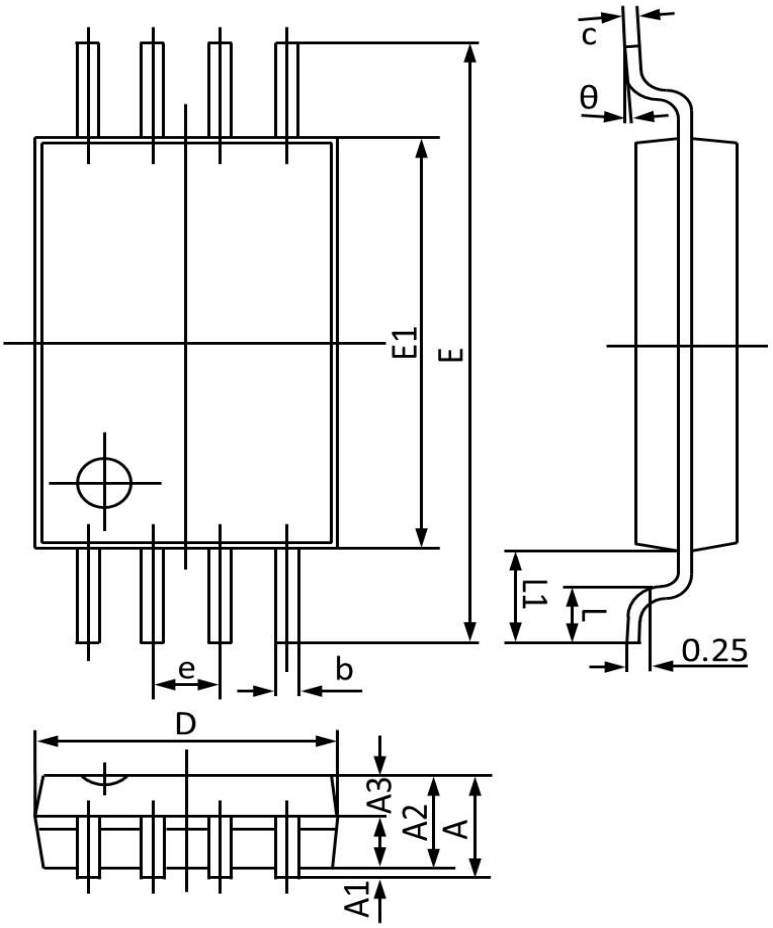


Fig.11 Gate Charge Waveform

TSSOP8 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	1.05	1.12	1.20	**E**		6.40 BSC	
A1	0.05	0.10	0.15	**E1**	4.30	4.40	4.50
A2	0.80	0.95	1.05	**e**		0.65 BSC	
A3	0.39	0.45	0.49	**L**	0.45	0.60	0.75
b	0.19	0.25	0.30	**L1**		1.00 BSC	
c	0.10	0.15	0.20	**θ**	0°		8°
D	2.90	3.00	3.10				