

Common-Drain Dual N-Channel 20 V Power MOSFET

PRODUCT SUMMARY

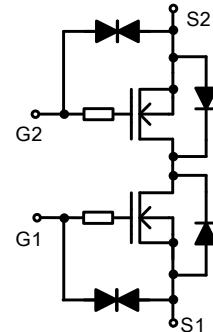
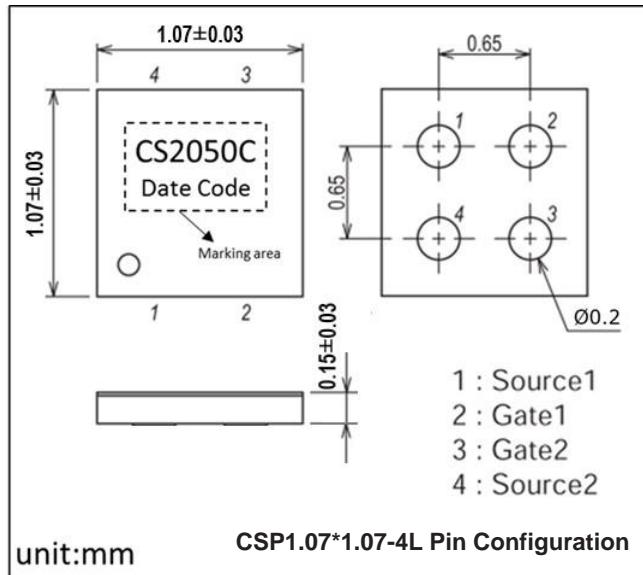
V_{SS} (V)	$R_{DS(on)}$ (mΩ) (Typ.)	I_S (A)	Q_g (Typ.)
20	32 at $V_{GS} = 4.5$ V	6	10.4 nC
	42 at $V_{GS} = 2.5$ V		

FEATURES

- Advanced Trench Technology
- Common-drain type
- Typical ESD Protection HBM Class 2

APPLICATIONS

- Lithium-Lon Battery Protection Circuit



ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Source-Source Voltage	V_{SS}	20	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Source Current	I_S	6	A
Pulsed Source Current ^a	I_{SP}	60	
Total Power Dissipation	P_T	1.6	W
Storage Temperature Range	T_{STG}	- 55 to 150	°C
Operating Junction Temperature Range	T_J	- 55 to 150	°C

Notes

a. PW≤10μs, duty cycle≤1%;

SPECIFICATIONS ($T_A = 25^\circ\text{C}$, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Source-Source Breakdown Voltage	BV_{SSS}	$V_{\text{GS}} = 0 \text{ V}$, $I_{\text{S}} = 250 \mu\text{A}$	20	-	-	V
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{SS}} = V_{\text{GS}}$, $I_{\text{S}} = 250 \mu\text{A}$	0.5	-	1.2	
Gate-Body Leakage	I_{GSS}	$V_{\text{SS}} = 0 \text{ V}$, $V_{\text{GS}} = \pm 8 \text{ V}$	-	-	± 10	μA
Zero Gate Voltage Source Current	I_{SSS}	$V_{\text{SS}} = 20 \text{ V}$, $V_{\text{GS}} = 0 \text{ V}$	-	-	1	μA
Source-Source On-State Resistance ^a	$R_{\text{SS}(\text{on})}$	$V_{\text{GS}} = 4.5 \text{ V}$, $I_{\text{S}} = 1.5 \text{ A}$	-	32	36	$\text{m}\Omega$
		$V_{\text{GS}} = 4.0 \text{ V}$, $I_{\text{S}} = 1.5 \text{ A}$	-	33	38	
		$V_{\text{GS}} = 3.7 \text{ V}$, $I_{\text{S}} = 1.5 \text{ A}$	-	34	41	
		$V_{\text{GS}} = 3.1 \text{ V}$, $I_{\text{S}} = 1.5 \text{ A}$	-	36	48	
		$V_{\text{GS}} = 2.5 \text{ V}$, $I_{\text{S}} = 1.5 \text{ A}$	-	42	55	
Forward Transconductance	g_{fs}	$V_{\text{SS}} = 10 \text{ V}$, $I_{\text{S}} = 3 \text{ A}$	-	5.2	-	S
Dynamic^b						
Total Gate Charge ^c	Q_{g}	$V_{\text{SS}} = 15 \text{ V}$, $V_{\text{GS}} = 4.5 \text{ V}$, $I_{\text{S}} = 6 \text{ A}$	-	10.4	-	nC
Turn-On Delay Time ^c	$t_{\text{d}(\text{on})}$	$V_{\text{DD}} = 10 \text{ V}$, $R_{\text{G}} = 3.3 \Omega$, $V_{\text{GS}} = 4.5 \text{ V}$, $I_{\text{S}} = 3 \text{ A}$	-	4.6	-	ns
Rise Time ^c	t_{r}		-	10.3	-	
Turn-Off Delay Time ^c	$t_{\text{d}(\text{off})}$		-	35	-	
Fall Time ^c	t_{f}		-	4.3	-	
Drain-Source Body Diode Ratings and Characteristics^b ($T_A = 25^\circ\text{C}$)						
Forward Voltage ^a	V_{F}	$I_{\text{F}} = 1.5 \text{ A}$, $V_{\text{GS}} = 0 \text{ V}$	-	0.7	1.1	V

Notes

- a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2 \%$.
- b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

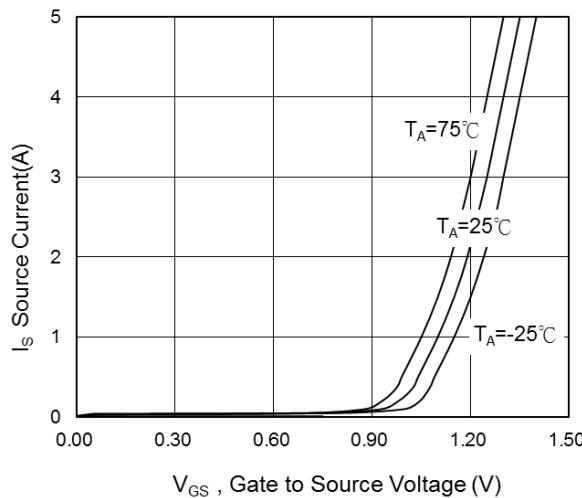


Fig.1 I_S - V_{GS}

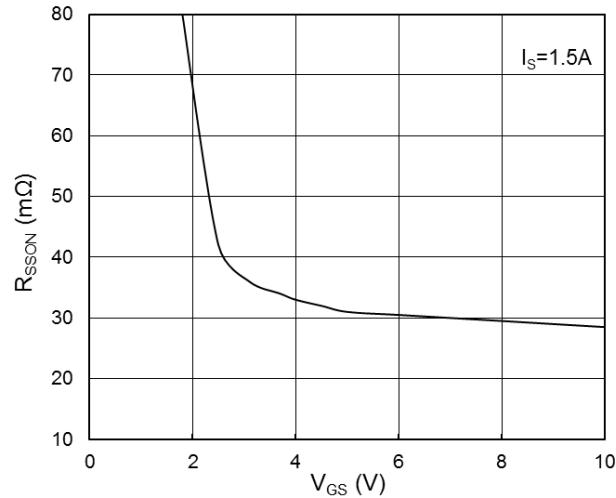


Fig.2 $R_{ss(ON)}$ - V_{GS}

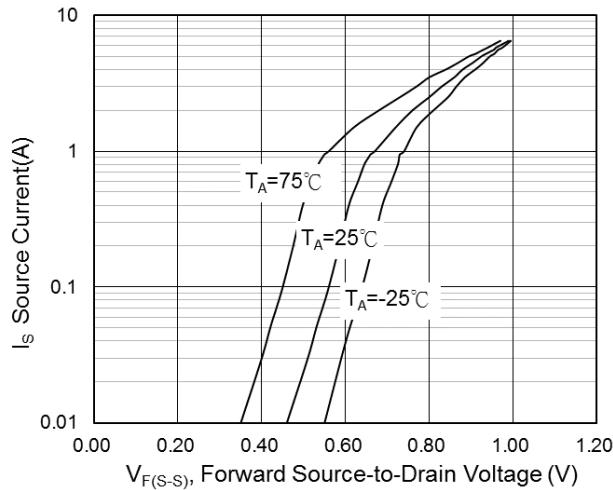


Fig.3 I_S - $V_{F(S-S)}$

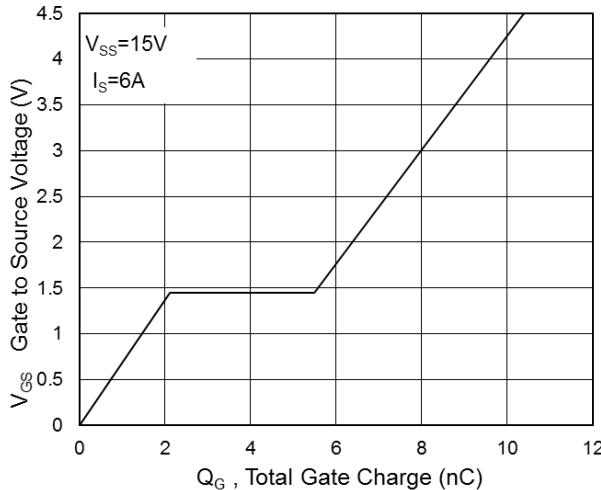


Fig.4 V_{GS} - Q_G

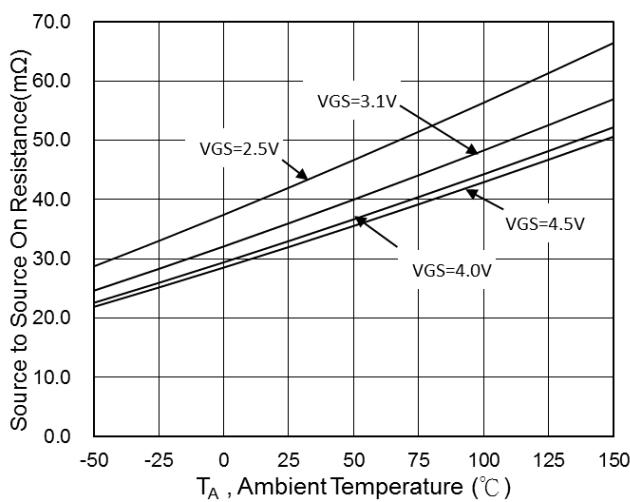


Fig.5 $R_{ss(ON)}$ - T_A

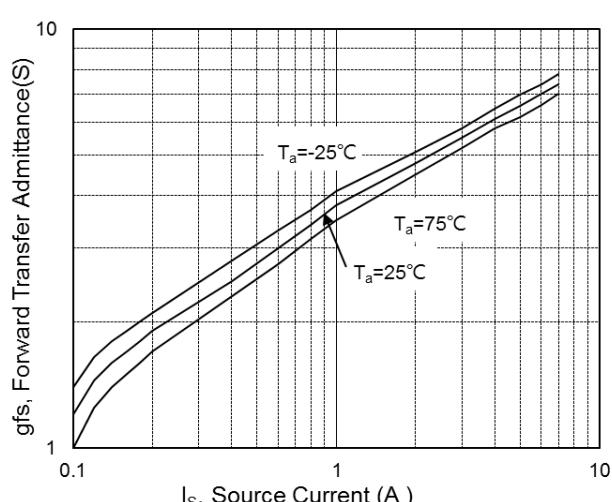


Fig.6 g_{fs} vs I_S

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

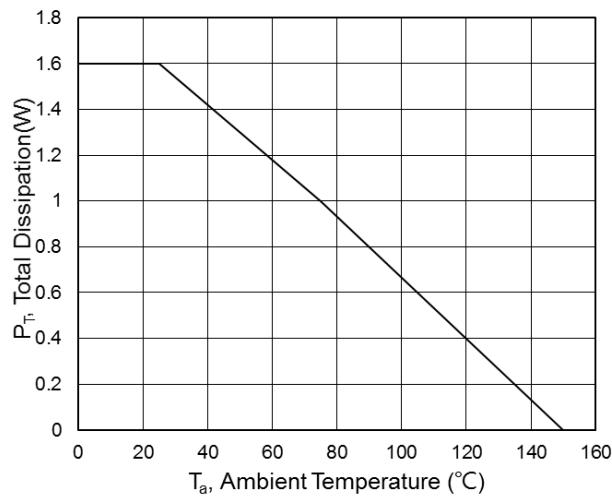


Fig.7 P_T – T_A

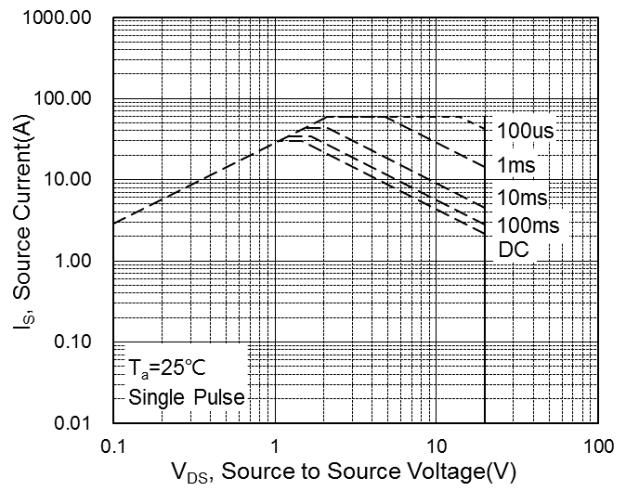


Fig.8 Safe Operating Area

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