

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	39mΩ@-4.5V	-5.4A
	49mΩ@-2.5V	
	63mΩ@-1.8V	

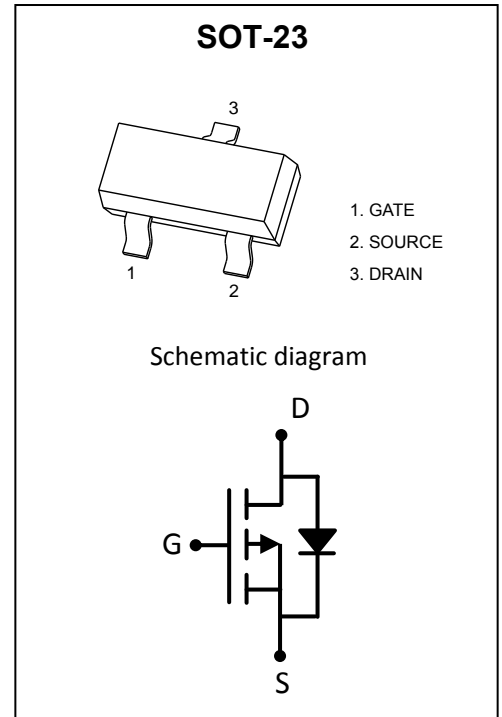
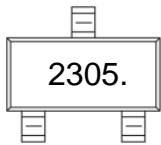
Feature

TrenchFET Power MOSFET
Excellent $R_{DS(on)}$ and Low Gate Charge

Application

DC/DC Converter
Load Switch for Portable Devices
Battery Switch

MARKING: 2305.



ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	-5.4	A
Pulsed Drain Current ($t=300\mu s$)	I_{DM}	-22	A
Power Dissipation	P_D	1.20	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	104	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.62	-1.0	V
Drain-source on-resistance ^a	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -5.4A$		27	39	m Ω
		$V_{GS} = -2.5V, I_D = -4.0A$		36	49	
		$V_{GS} = -1.8V, I_D = -3.0A$		48	63	
Dynamic characteristics^{b,c}						
Input Capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		1010		pF
Output Capacitance	C_{oss}			130		
Reverse Transfer Capacitance	C_{rss}			109		
Total Gate Charge	Q_g	$V_{DS} = -4.5V, V_{GS} = -10V, I_D = -4.0A$		10.98		nC
Gate-Source Charge	Q_{gs}			2.17		
Gate-Drain Charge	Q_{gd}			2.54		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -4.5V, V_{GEN} = -10V, I_D = -4.0A$ $R_L = 2.5\Omega, R_{GEN} = 3\Omega$		8.4		ns
Turn-on rise time	t_r			36.2		
Turn-off delay time	$t_{d(off)}$			76.8		
Turn-off fall time	t_f			56		
Source-Drain Diode characteristics						
Diode forward current	I_S	$T_C = 25^\circ\text{C}$			-1.4	A
Diode pulsed forward current ^a	I_{SM}				-10	A
Diode Forward voltage	V_{DS}	$V_{GS} = 0V, I_S = -5.4A$			-1.2	V

Note :

- a. Pulse Test ; Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.
- c. These parameters have no way to verify.

Typical Electrical and Thermal Characteristics

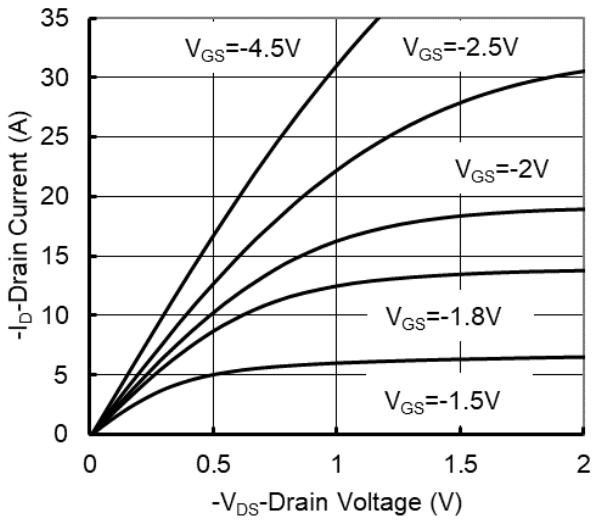


Figure1. Output Characteristics

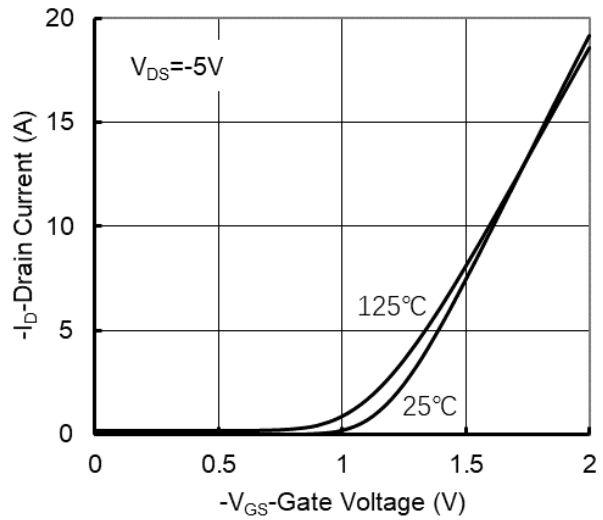


Figure2. Transfer Characteristics

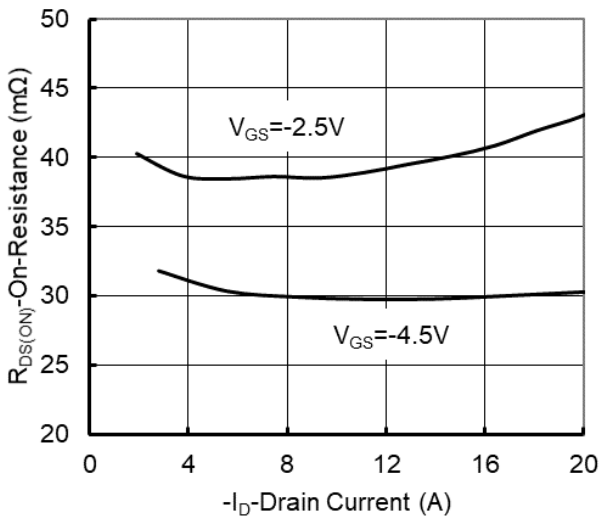


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

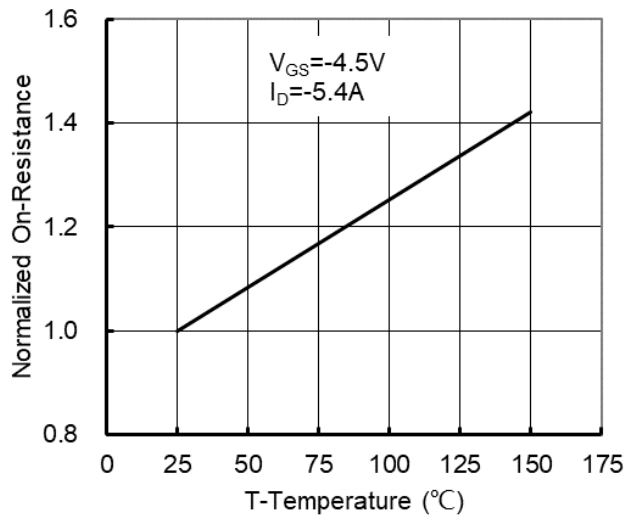


Figure 4: On-Resistance vs. Junction Temperature

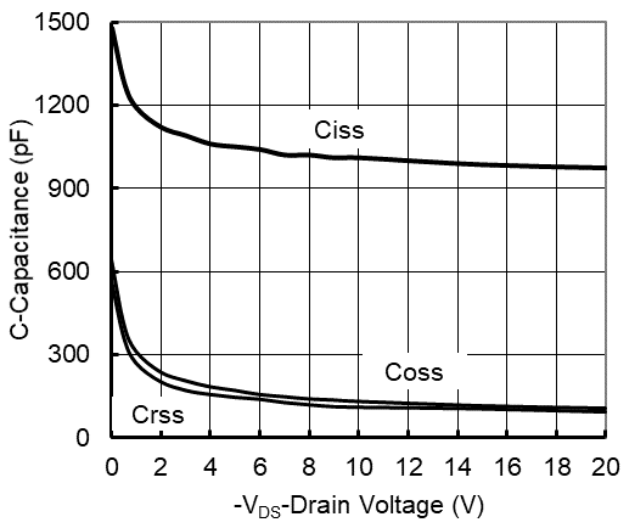


Figure5. Capacitance Characteristics

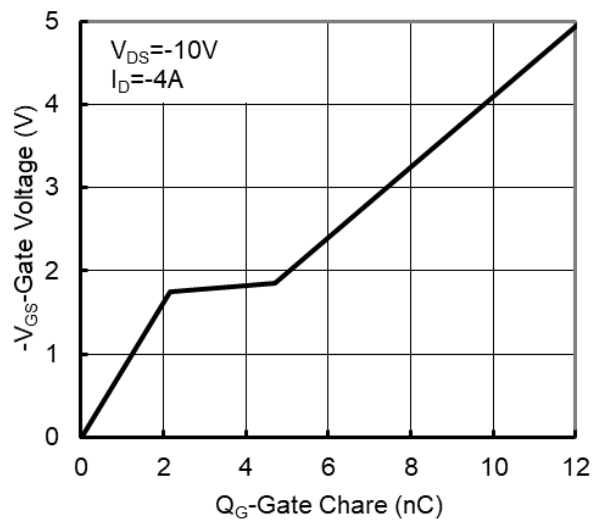
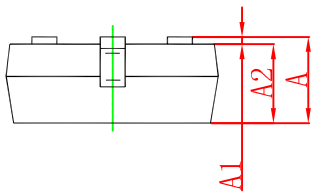
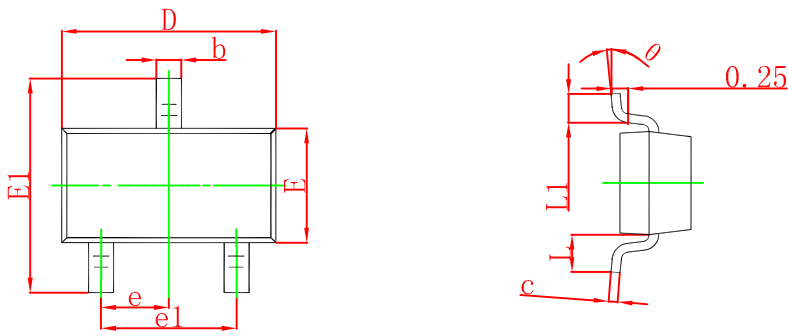
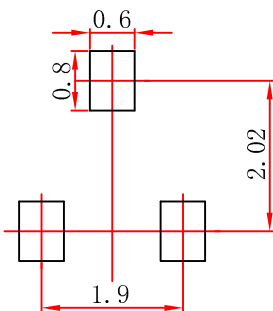


Figure6. Gate Charge



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.