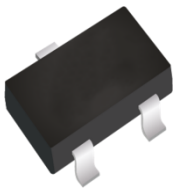
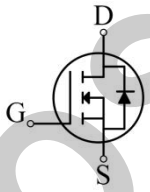
Enhancement Mode N-Channel Power MOSFET

PRIMARY CHARACTERISTICS		
BV_{DSS}	$R_{DS(ON)}$MAX	I_D
30V	27mΩ@VGS=10V	5.8A
	33mΩ@VGS=4.5V	

SOT-23





Features

- Trench Power LV MOSFET technology
- High-density cell design for low RDS(on)
- High-speed switching
- RoHS compliant
- Halogen free

Mechanical Data

- Package: SOT-23
- Surface mount device
- 3 terminals
- RoHS and halogen free compliant

Applications

- Battery protection
- Load switch
- Power management

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
DC3400B	SOT-23	-	7" Tape&Reel	3,000

Maximum Ratings (@ T_A = 25°C, unless otherwise specified.)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	30	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current (V_{GS} = 4.5V) (1)	T_A = 25°C	I_D	5.8	A
	T_A = 70°C		4.5	A
Pulsed Drain Current (2)		I_{DM}	23	A
Power Dissipation	T_A = 25°C	P_D	1.2	W
Junction & Storage Temperature Range		T_J, T_{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient (3)	$R_{\theta JA}$	104	-	°C/W

Electrical Characteristics (@ T_J = 25°C, unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics (4)						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	VGS=0V, ID=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	VDS=30V VGS = 0V,TJ=25℃	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	VGS=±20V, VDS = 0V	-	-	100	nA
On Characteristics (4)						
Gate Threshold Voltage	$V_{GS(th)}$	VDS=VGS, ID=250μA	0.65	0.9	1.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	VGS=2.5V, ID=3.0A	-	31	51	mΩ
		VGS=4.5V, ID=5.0A	-	25	33	mΩ
		VGS=10V, ID=5.8A	-	21	27	mΩ
Diodes Forward Voltage	V_{SD}	IS=5.8A, VGS=0V	-	0.8	1.2	V
Dynamic Characteristics (4)						
Input Capacitance	C_{iss}	VDS=15V, VGS=0V, f=1MHz	-	702	-	pF
Output Capacitance	C_{oss}		-	66	-	pF
Reverse Transfer Capacitance	C_{rss}		-	52	-	pF
Switching Characteristics (5)						
Turn-On DelayTime	$t_{d(on)}$	VGS=4.5V, VDD=15V ID=1A, RGEN=2.8Ω	-	12	-	ns
Rise Time	t_r		-	52	-	ns
Turn-Off DelayTime	$t_{d(off)}$		-	17	-	ns
Fall Time	t_f		-	10	-	ns
Gate Charge Characteristics (5)						
Total Gate Charge	Q_g	VDS=15V, ID=5.8A, VGS=4.5V	-	4.8	-	nC
Gate-Source Charge	Q_{gs}		-	1.2	-	nC
Gate-Drain Charge	Q_{gd}		-	1.7	-	nC
Drain-Source Diode Characteristics(5)						
Diode Forward Current	I_S	TA = 25°C	-	-	5.8	A

Notes:

1. This current is chip limited, which is calculated based on Rthja.
2. This current is calculated on single pulse with 10μs Single Pulse .
3. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
4. Short duration pulse test used to minimize self-heating effect.
5. Defined by design, not subject to production.

■ Typical Performance Characteristics

Figure1: Output Characteristics

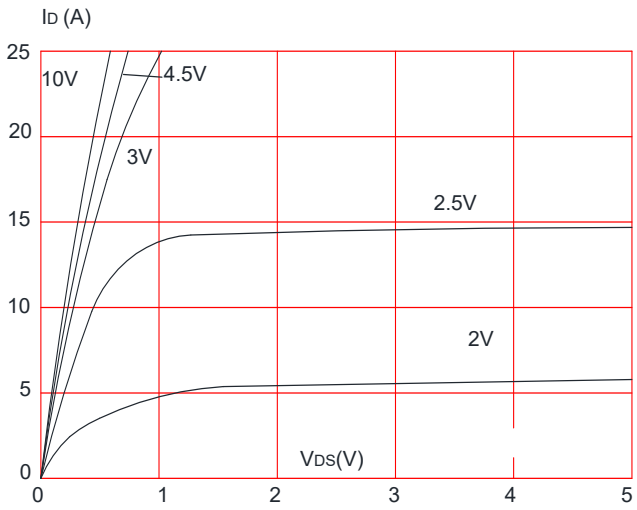


Figure 2: Typical Transfer Characteristics

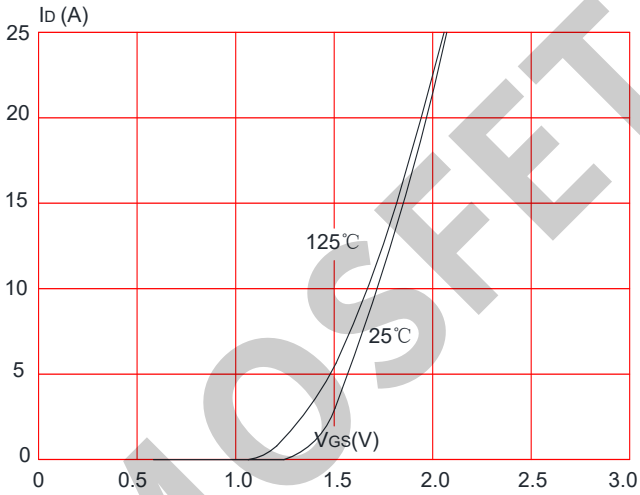


Figure 3: On-resistance vs. Drain Current

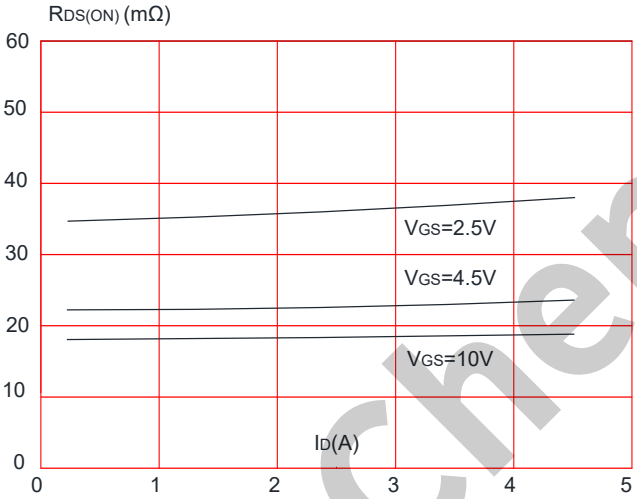


Figure 4: Body Diode Characteristics

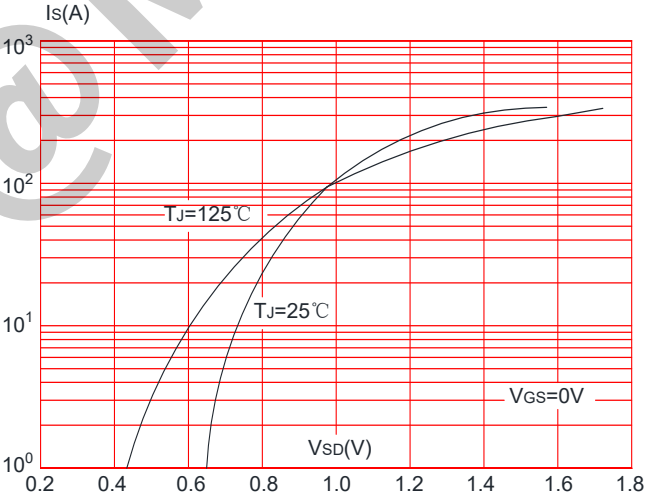


Figure 5: Gate Charge Characteristics

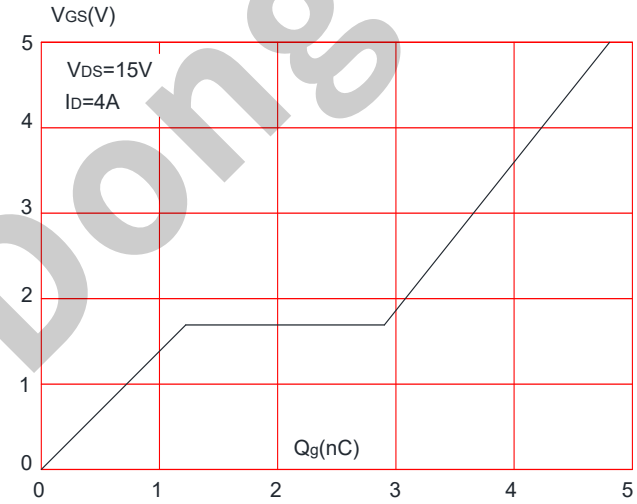


Figure 6: Capacitance Characteristics

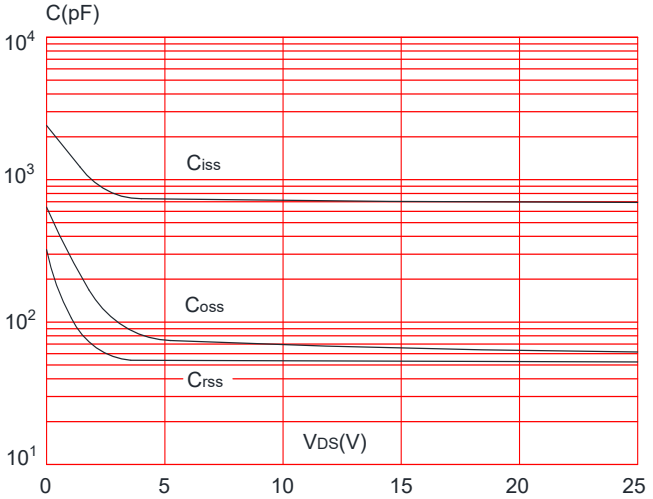


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

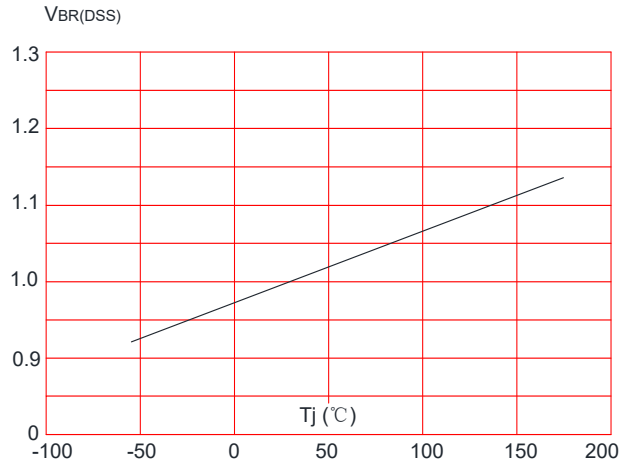


Figure 8: Normalized on Resistance vs. Junction Temperature

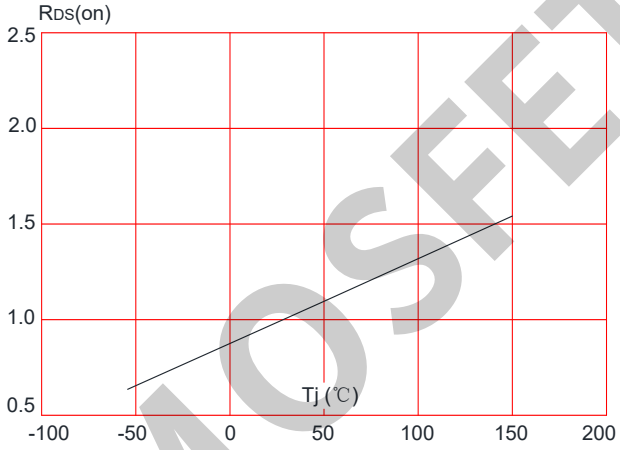


Figure 9: Maximum Safe Operating Area

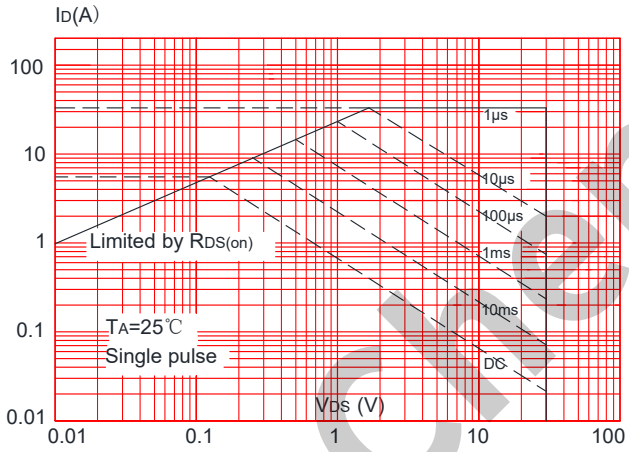
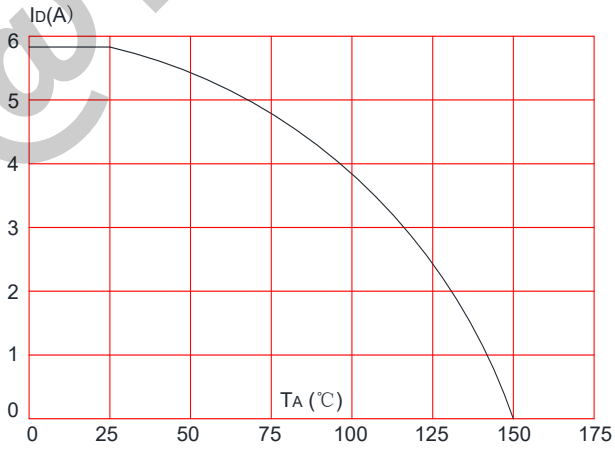
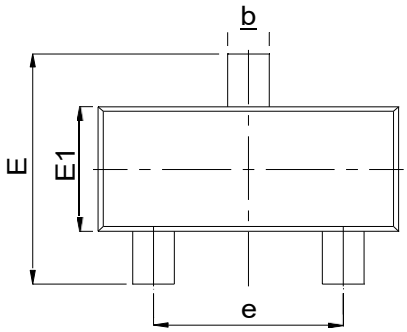


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

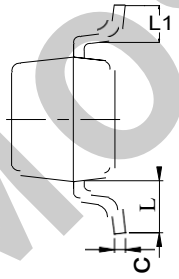


Outline Drawing

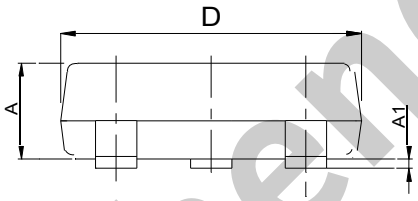
SOT-23



Top View



Side View



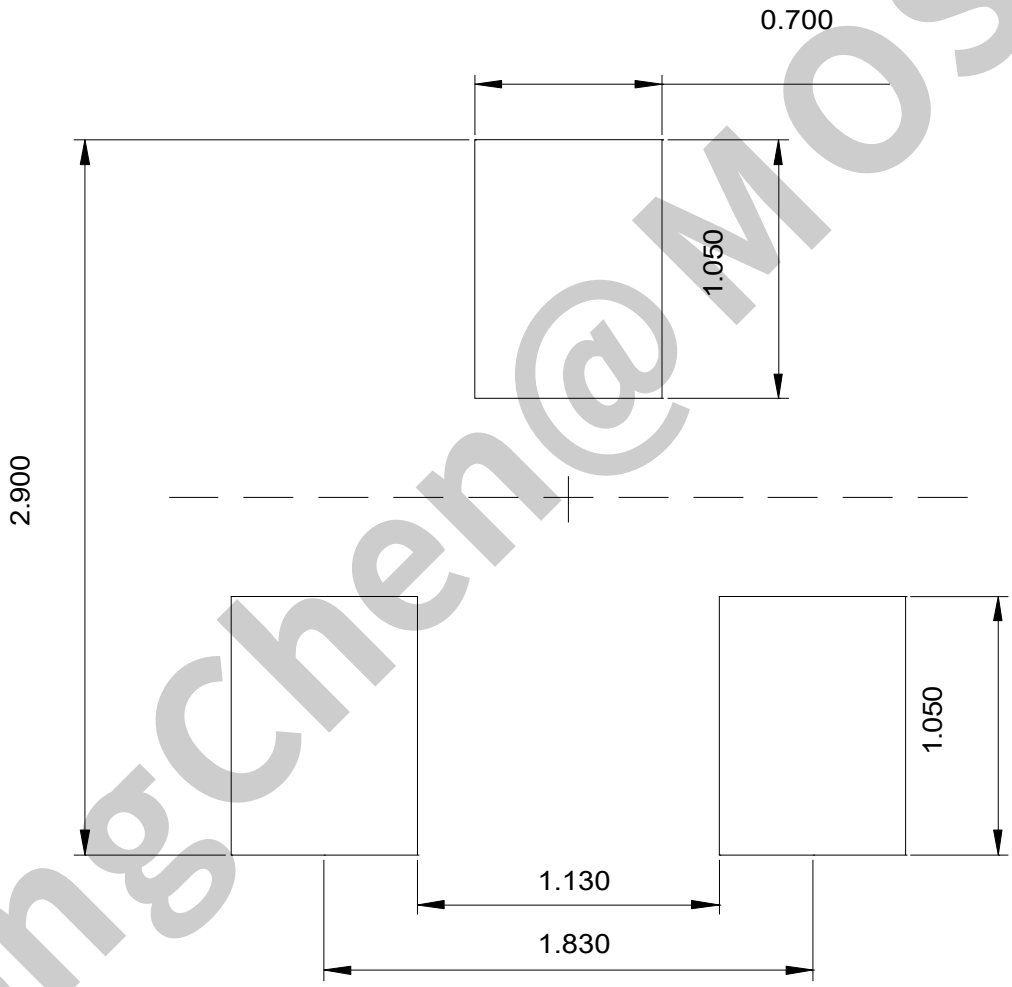
Front View

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.10
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
L	0.45	0.55	0.65
L1	0.20	-	0.55
b	0.30	0.40	0.50
c	-	0.10	0.15
e	-	1.90	-

Dimensions in inches and (millimeters)

Suggested Soldering Pad Layout

SOT-23



Dimensions in inches and (millimeters)

Important Notice

DongChen Electronics reserves the right to make changes without further notice to any products herein.

DongChen Electronics makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does DongChen Electronics assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages.

“Typical” parameters which may be provided in DongChen Electronics data sheets and/or specifications can and do vary in different applications and actual performance may vary over time.

All operating parameters, including “Typicals,” must be validated for each customer application by the customer’s technical experts.

DongChen Electronics does not convey any license under its patent rights nor the rights of others.

The products listed in this document are designed to be used with ordinary electronic equipment or devices.

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, aerospace machinery, nuclear-reactor controllers, fuel controllers, and other safety devices), please be sure to consult with our sales representative in advance.

Head Office
Contact Information:
DongChen Electronics Co.,Ltd.
Address：2F., No.407, Sec. 2, Longgang Rd.,Zhongli Dist., Taoyuan City 32097, Taiwan (R.O.C.)
Tel: 03-284-1808
Fax: 03-284-1404
Mail:dc@dongchen.com.tw
Web:www.dongchen.com.tw