

## N-Channel 20V (D-S) MOSFET with PNP Transistor

$V_{(BR)DSS}/V_{CEO}$	$R_{DS(on)MAX}$	$I_D/I_C$
20V	0.35Ω@4.5V	0.6A
	0.55Ω@2.5V	
-25V	/	-1.0A

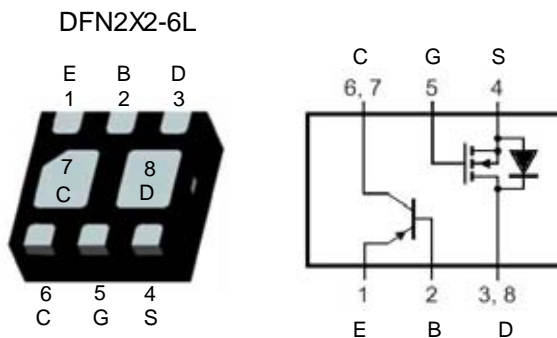
### Features

- Small package DFN2x2-6L
- High DC current gain
- RoHS and Halogen-Free Compliant

### Applications

- Charging Switch for Portable Devices
- Power management

### Pin Configuration



### Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
EC4302	11M .XXX	7"	8mm	3000pcs

### Absolute Maximum Ratings (T<sub>J</sub>=25 °C Unless Otherwise Noted)

Symbol	Parameter	Value	Unit
<b>PNP Transistor</b>			
$V_{CBO}$	Collector-Base Voltage	-40	V
$V_{CEO}$	Collector-Emitter Voltage	-25	V
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current	-1.0	A
<b>N-MOSFET</b>			
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	±10	V
$I_D$	Drain Current -Continuous <sup>A</sup>	0.6	A
$I_{DM}$	Drain Current - Pulse <sup>B</sup>	1.4	A
<b>Power Dissipation, Temperature and Thermal Resistance</b>			
$P_D$	Power Dissipation <sup>A</sup>	0.9	W
$R_{θJA}$	Thermal Resistance from Junction to Ambient <sup>A</sup>	139	°C/W
$T_J$	Junction Temperature	150	°C
$T_{stg}$	Storage Temperature	-55~+150	°C
$T_L$	Lead Temperature	260	°C

**PNP TRANSISTOR ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-0.1mA, I <sub>E</sub> =0	-40			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =-1mA, I <sub>B</sub> =0	-25			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-0.1mA, I <sub>C</sub> =0	-5			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =-40V, I <sub>E</sub> =0			-1	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =-5V, I <sub>C</sub> =0			-1	μA
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-0.1A	85		400	
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =-0.6A, I <sub>B</sub> =-60mA			-0.4	V

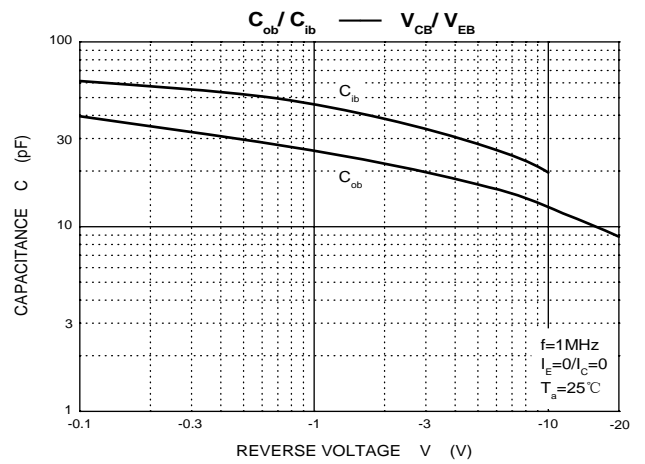
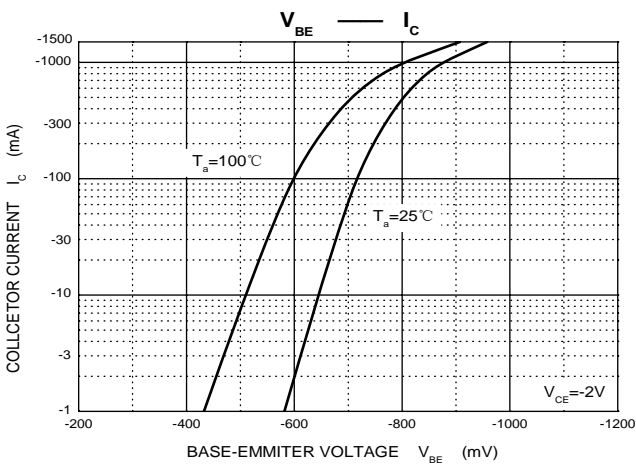
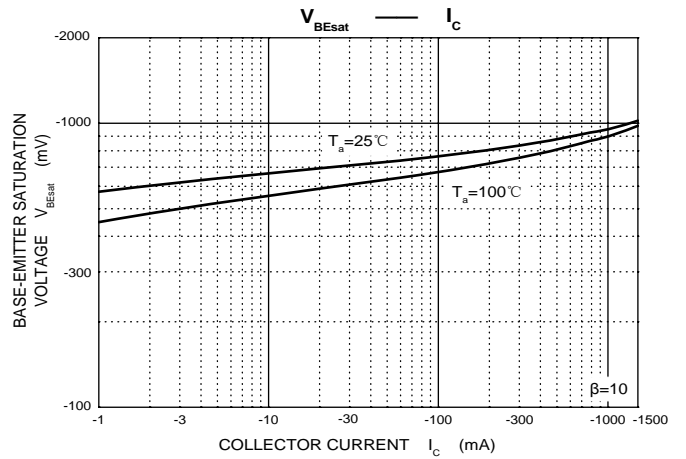
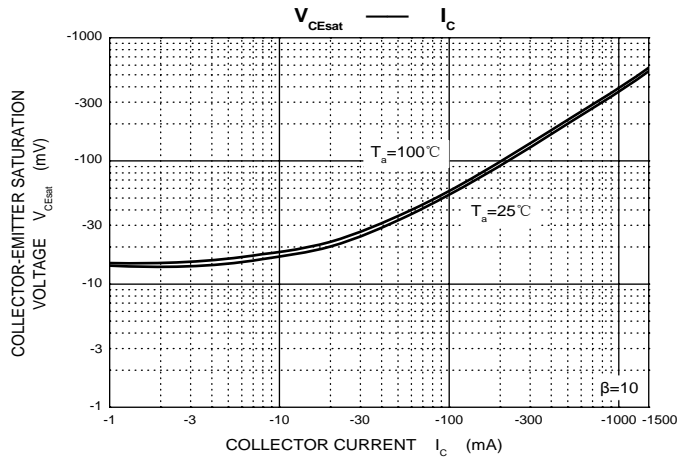
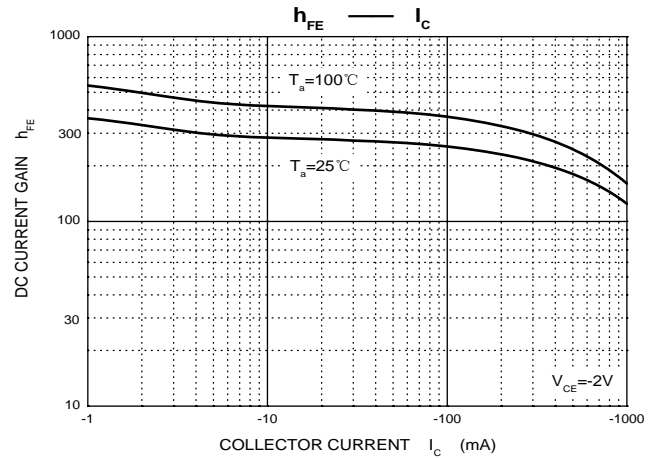
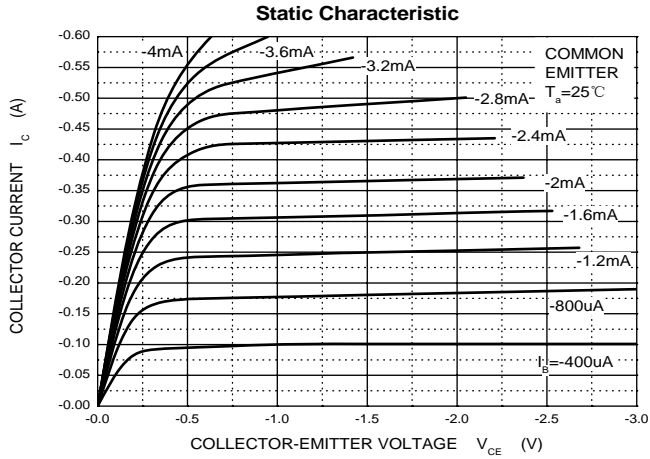
**N-ch MOSFET ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V			±10	μA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.4	0.7	1.0	V
Drain-source on-resistance	R <sub>DS(on)</sub> <sup>B</sup>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.5A			0.35	Ω
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.5A			0.55	Ω
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =0.5A, V <sub>GS</sub> =0V		0.7	1.3	V

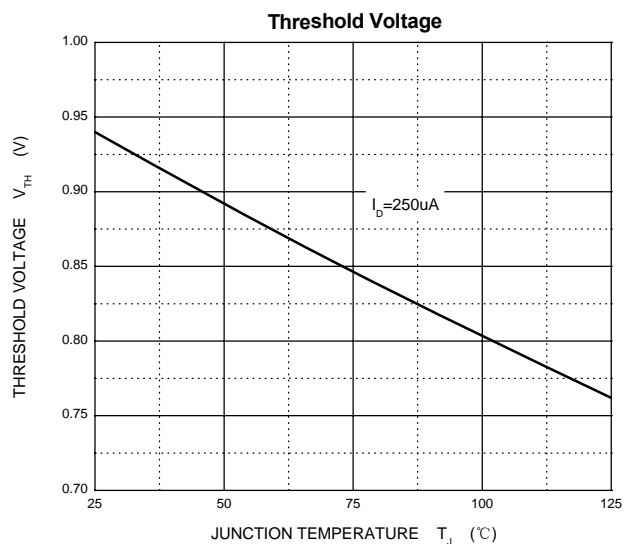
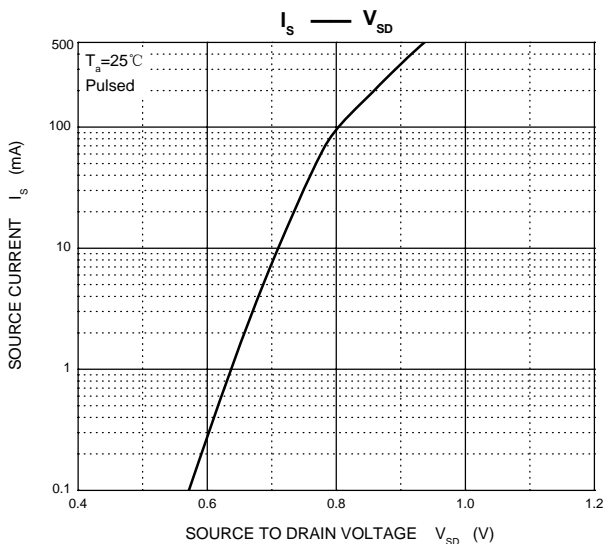
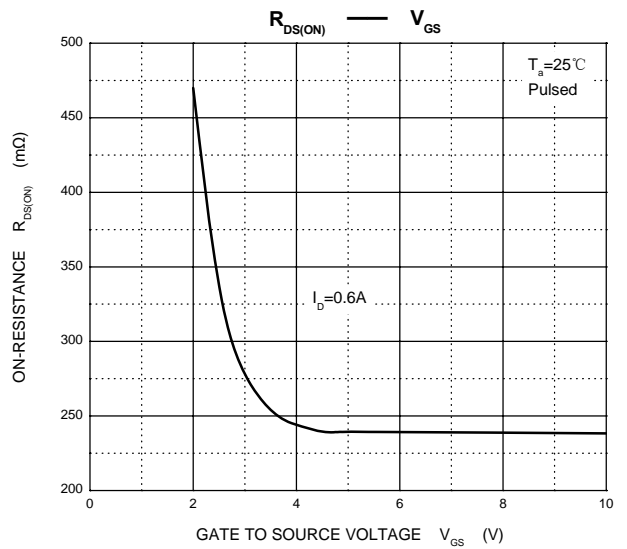
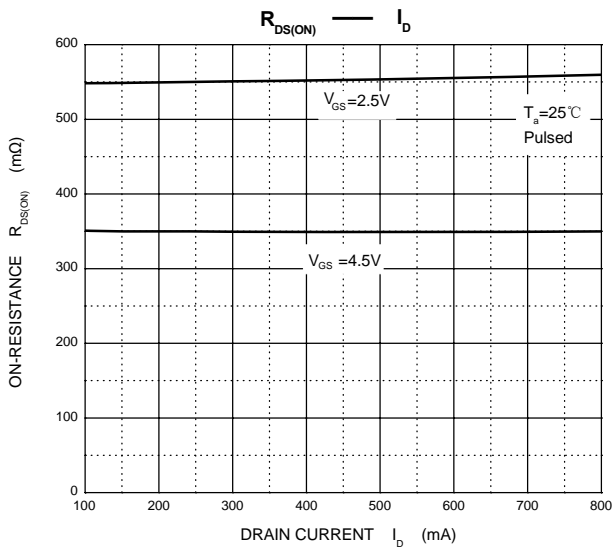
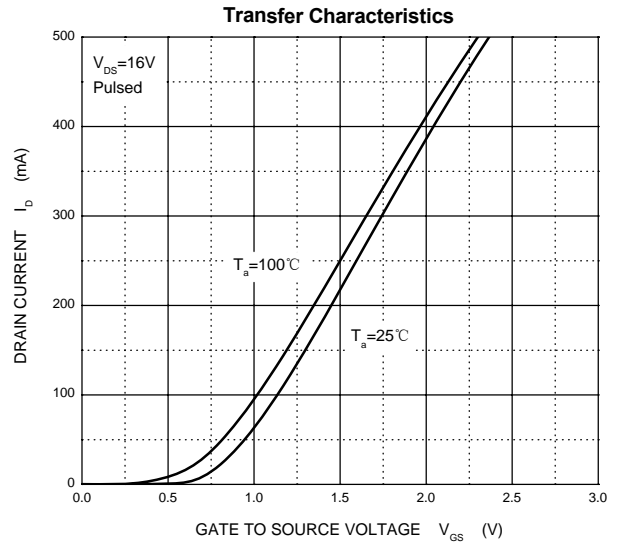
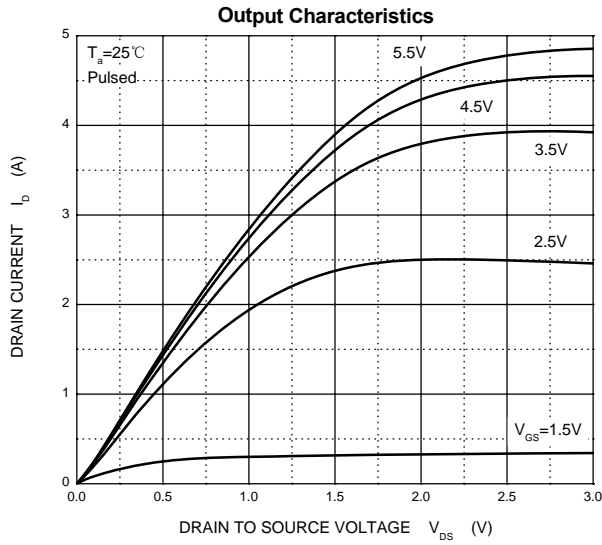
A. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 20Z copper.

B. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

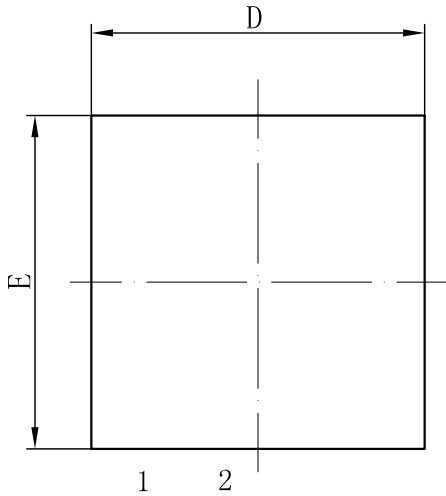
**PNP TRANSISTOR TYPICAL CHARACTERISTICS**



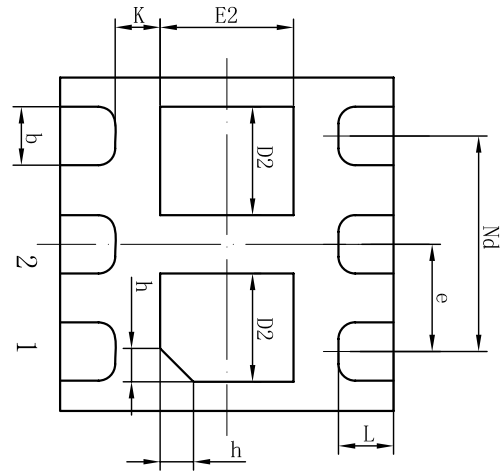
MOSFET TYPICAL CHARACTERISTICS(25°C, unless otherwise noted)



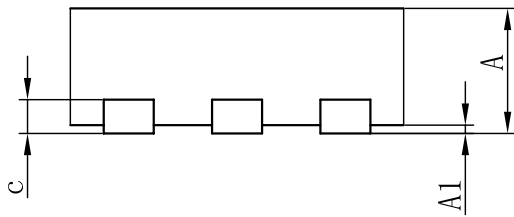
### DFN2X2-6L Package Information



Top View



Bottom View



Side View

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0	0.02	0.05
b	0.30	0.35	0.40
c	0.18	0.20	0.25
D	1.95	2.00	2.05
D2	0.60	0.65	0.70
e	0.65BSC		
Nd	1.30BSC		
E	1.95	2.00	2.05
E2	0.75	0.80	0.85
K	0.20	-	-
L	0.28	0.33	0.38
h	0.15	0.20	0.25