



## DFNWB3×3-8L-K Plastic-Encapsulate MOSFETS

### BE5005 Dual N-Channel MOSFET

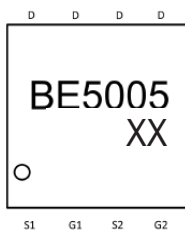
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
20V	9.3 mΩ@4.5V	10A
	9.7mΩ@4.0V	
	10.0mΩ@3.8V	
	10.7mΩ@3.1V	
	12.5mΩ@2.5V	



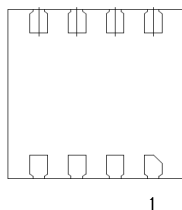
#### DESCRIPTION

The BE5005 uses advanced trench technology to provide excellent  $R_{DS(ON)}$  and low gate charge. It is ESD protected. This device is suitable for use as a uni-directional or bi-directional load switch, facilitated by its common-drain configuration.

#### MARKING:



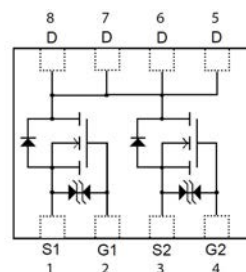
Top



Back

BE5005 = Part No.  
 Solid dot = Pin1 indicator.  
 XX = Code.

#### Equivalent Circuit



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	±12	V
Continuous Drain Current	$I_D$	10	A
Pulsed Drain Current	$I_{DM}^*$	60	A
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	$^{\circ}C/W$
Junction Temperature	$T_j$	150	$^{\circ}C$
Storage Temperature	$T_{stg}$	-55~+150	$^{\circ}C$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	$T_L$	260	$^{\circ}C$

# MOSFET ELECTRICAL CHARACTERISTICS

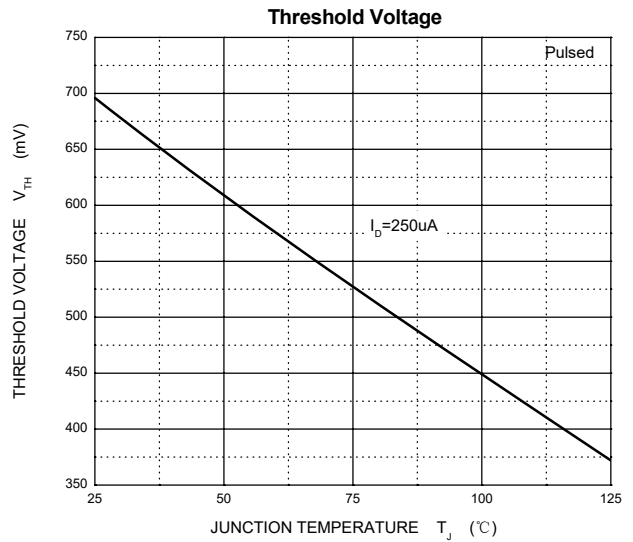
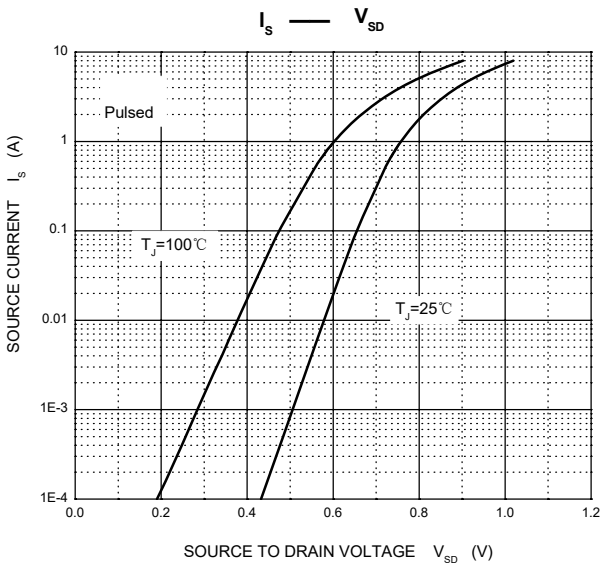
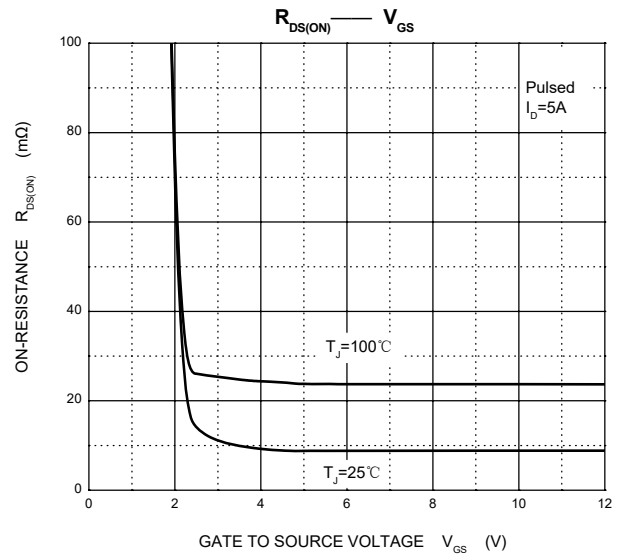
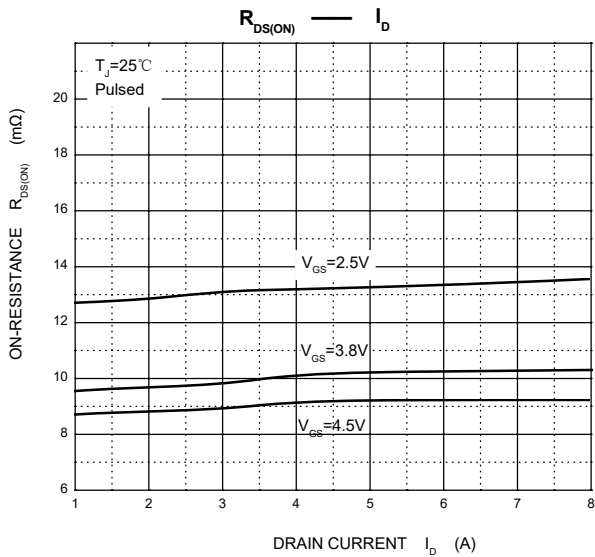
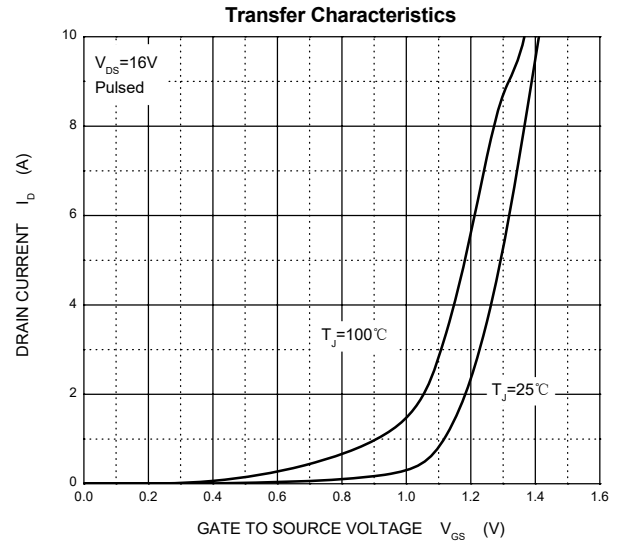
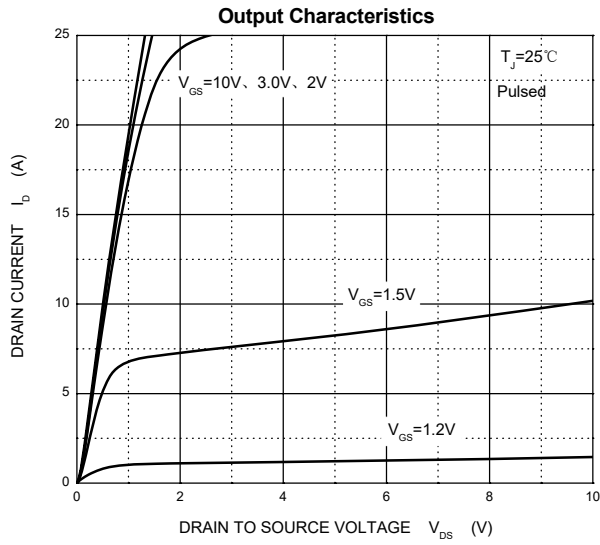
$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 16V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 4.5V, V_{DS} = 0V$			$\pm 1$	$\mu A$
		$V_{GS} = \pm 8V, V_{DS} = 0V$			$\pm 10$	$\mu A$
Gate threshold voltage (note 1)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.4		1	V
Drain-source on-resistance (note 1)	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5A$	8	9.3	11.5	$m\Omega$
		$V_{GS} = 4.0V, I_D = 5A$	8.2	9.7	12.5	$m\Omega$
		$V_{GS} = 3.8V, I_D = 5A$	8.5	10.0	13	$m\Omega$
		$V_{GS} = 3.1V, I_D = 5A$	9	10.7	14	$m\Omega$
		$V_{GS} = 2.5V, I_D = 5A$	9.5	12.5	17	$m\Omega$
Forward transconductance (note 1)	$g_{FS}$	$V_{DS} = 5V, I_D = 7A$	9	36		S
Diode forward voltage (note 1)	$V_{SD}$	$I_S = 1A, V_{GS} = 0V$			1	V
<b>DYNAMIC PARAMETERS (note 2)</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		1700		$\mu F$
Output Capacitance	$C_{oss}$			230		$\mu F$
Reverse Transfer Capacitance	$C_{rss}$			200		$\mu F$
Total gate charge	$Q_g$	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 7A$		17		nC
Gate-source charge	$Q_{gs}$			1.5		nC
Gate-drain charge	$Q_{gd}$			4.7		nC
<b>SWITCHING PARAMETERS (note 2)</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 5V, V_{DD} = 10V,$ $R_L = 1.35\Omega, R_{GEN} = 3\Omega$		2.5		ns
Turn-on rise time	$t_r$			7.2		ns
Turn-off delay time	$t_{d(off)}$			49		ns
Turn-off fall time	$t_f$			108		ns
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Current	$I_S$		-	-	8.0	A

**Notes :**

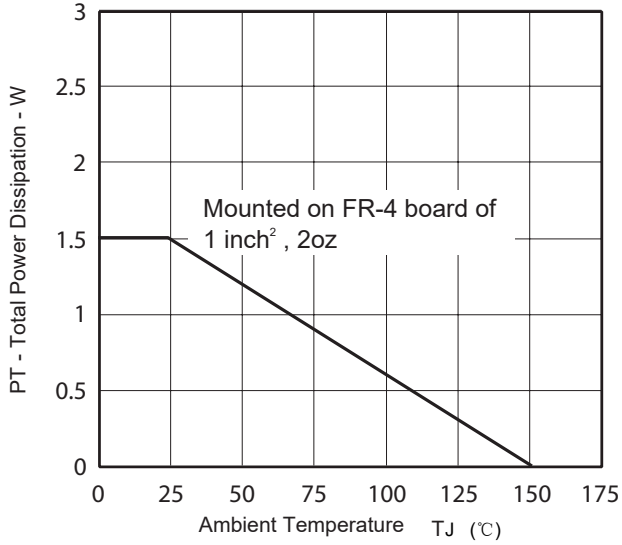
1. Pulse Test : Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 0.5\%$ .
2. Guaranteed by design, not subject to production testing.

# Typical Characteristics

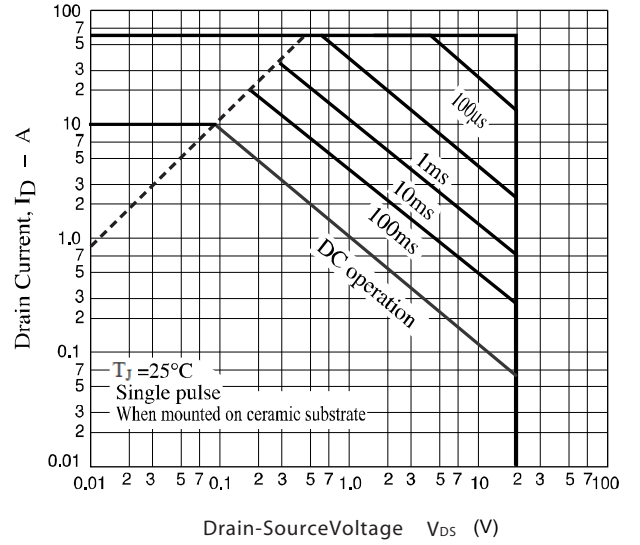


# Typical Characteristics

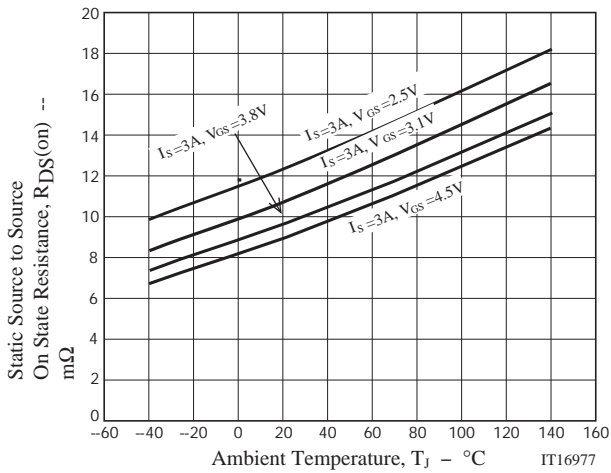
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



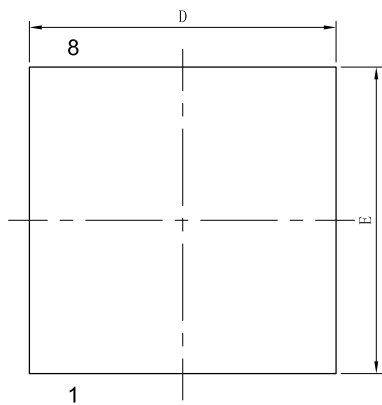
Maximum Safe Operating Area



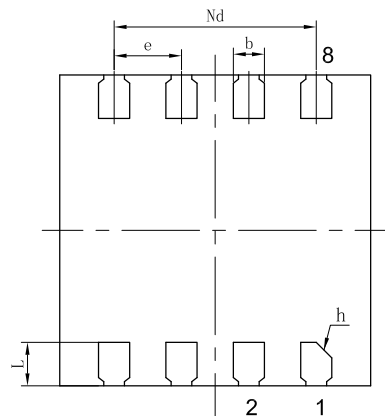
CJBE5005  $R_{DS(on)}$  vs.  $T_A$



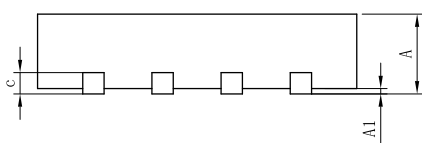
## DFNWB3×3-8L-K Package Outline Dimensions(Unit:mm)



TOP VIEW



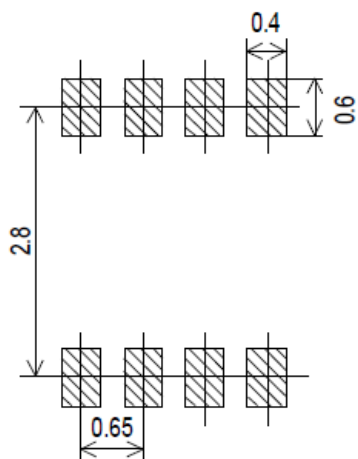
BOTTOM VIEW



SIDE VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
b	0.25	0.30	0.35
c	0.19	0.20	0.21
D	2.90	3.00	3.10
Nd	1.90	1.95	2.00
E	2.90	3.00	3.10
e	0.65BSC		
L	0.37	0.42	0.47
h	0.10	0.15	0.20
载体尺寸 (mil)	102X84		

## DFNWB3×3-8L-K Suggested Pad Layout



**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.050\text{mm}$ .
3. The pad layout is for reference purposes only.