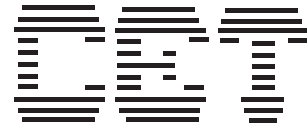


**CEP703AL/CEB703AL
CEP703ALZ/CEB703ALZ
CEP703ALG/CEB703ALG**



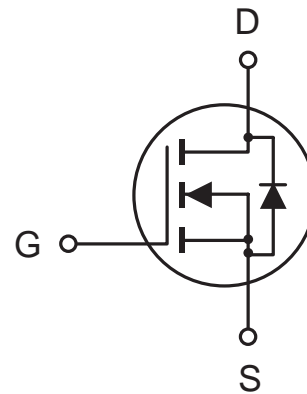
4

N-Channel Logic Level Enhancement Mode Field Effect Transistor

March 1998

FEATURES

- 30V , 40A , $R_{DS(ON)}=17m\Omega$ @ $V_{GS}=10V$.
 $R_{DS(ON)}=30m\Omega$ @ $V_{GS}=4.5V$.
- Super high dense cell design for extremely low $R_{DS(ON)}$.
- High power and current handling capability.
- The character "Z" represents the "Lead free".
- The character "G" represents the "Green package".
- TO-220 & TO-263 package.



ABSOLUTE MAXIMUM RATINGS (Tc=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous ^a @T _J =125°C -Pulsed	I _D	40	A
	I _{DM}	120	A
Drain-Source Diode Forward Current ^a	I _S	40	A
Maximum Power Dissipation ^a @T _c =25°C Derate above 25°C	P _D	50	W
		0.4	W/°C
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to 175	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	R _{θJC}	3	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	°C/W

CEP703AL/CEB703AL
CEP703ALZ/CEB703ALZ
CEP703ALG/CEB703ALG

ELECTRICAL CHARACTERISTICS (Tc 25°C unless otherwise noted)

4

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
ON CHARACTERISTICS^a						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.7	3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 25A		14	17	mΩ
		V _{GS} = 4.5V, I _D = 10A		22	30	mΩ
On-State Drain Current	I _{D(ON)}	V _{GS} = 10V, V _{DS} = 10V	60			A
Forward Transconductance	g _{FS}	V _{DS} = 10V, I _D = 25A		30		S
DYNAMIC CHARACTERISTICS^b						
Input Capacitance	C _{ISS}	V _{DS} = 15V, V _{GS} = 0V f = 1.0MHz		1005		pF
Output Capacitance	C _{OSS}			420		pF
Reverse Transfer Capacitance	C _{RSS}			100		pF
SWITCHING CHARACTERISTICS^b						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 15V, I _D = 25A, V _{GS} = 10V, R _{GEN} = 24Ω		18	23	ns
Rise Time	t _r			120	180	ns
Turn-Off Delay Time	t _{D(OFF)}			80	120	ns
Fall Time	t _f			60	165	ns
Total Gate Charge	Q _g	V _{DS} = 10V, I _D = 25A, V _{GS} = 5V		15	20	nC
Gate-Source Charge	Q _{gs}			3		nC
Gate-Drain Charge	Q _{gd}			7		nC

CEP703AL/CEB703AL
CEP703ALZ/CEB703ALZ
CEP703ALG/CEB703ALG

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

4

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS^b						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_s = 25A$		0.93	1.3	V

Notes

- a. Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

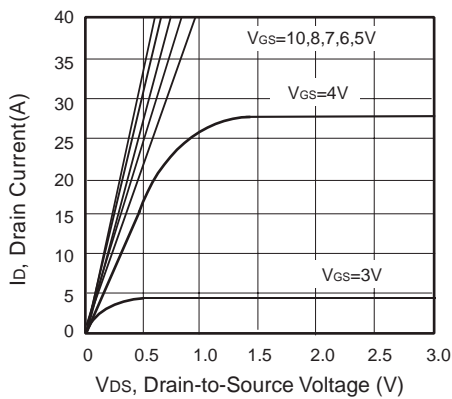


Figure 1. Output Characteristics

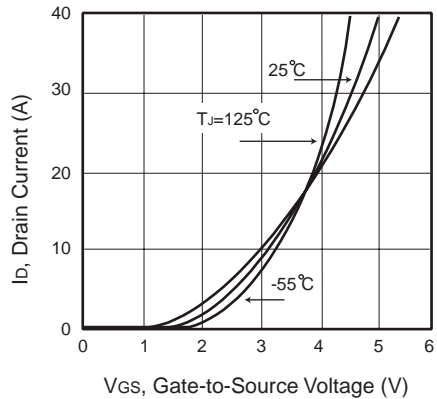


Figure 2. Transfer Characteristics

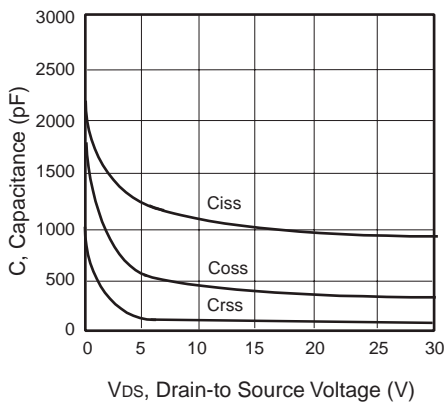


Figure 3. Capacitance

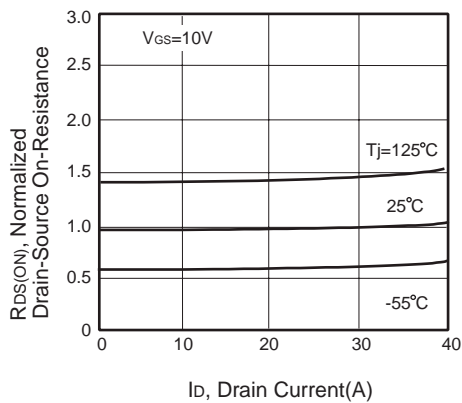


Figure 4. On-Resistance Variation with Drain Current and Temperature

**CEP703AL/CEB703AL
CEP703ALZ/CEB703ALZ
CEP703ALG/CEB703ALG**

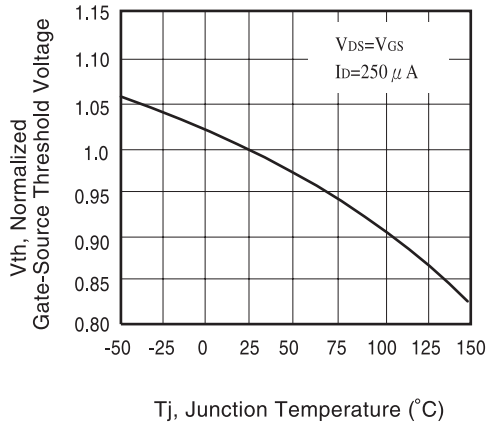


Figure 5. Gate Threshold Variation with Temperature

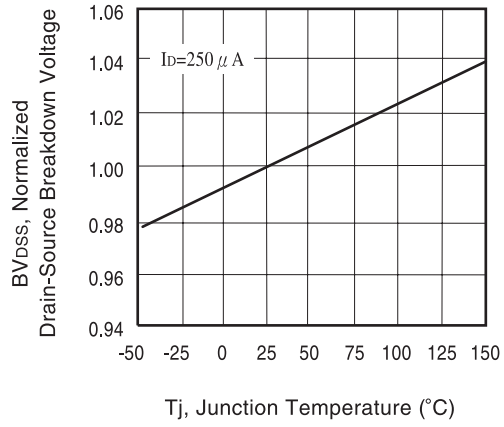


Figure 6. Breakdown Voltage Variation with Temperature

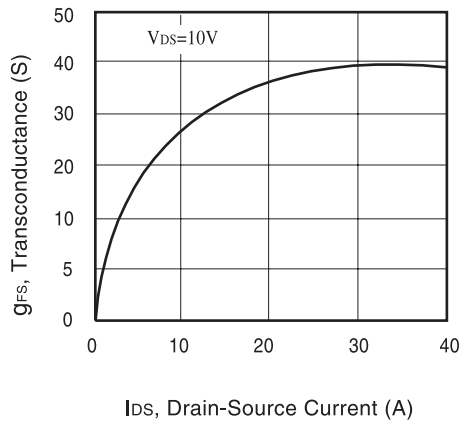


Figure 7. Transconductance Variation with Drain Current

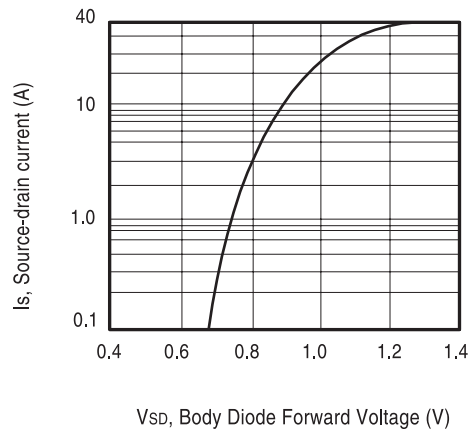


Figure 8. Body Diode Forward Voltage Variation with Source Current

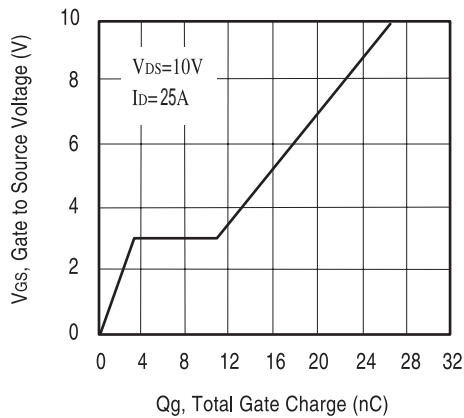


Figure 9. Gate Charge

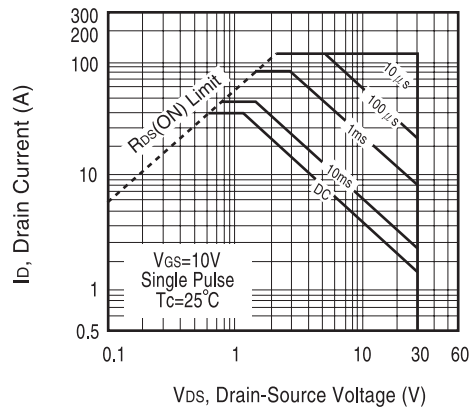


Figure 10. Maximum Safe Operating Area

CEP703AL/CEB703AL
 CEP703ALZ/CEB703ALZ
 CEP703ALG/CEB703ALG

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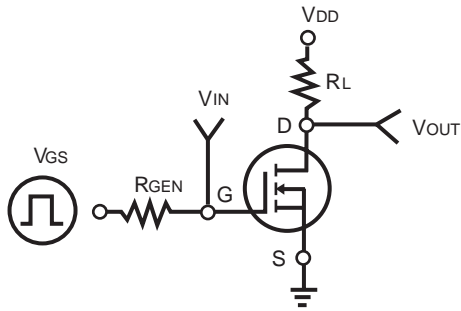


Figure 11. Switching Test Circuit

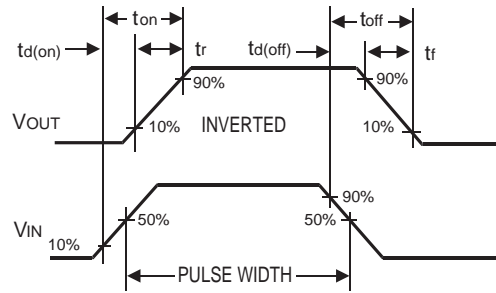


Figure 12. Switching Waveforms

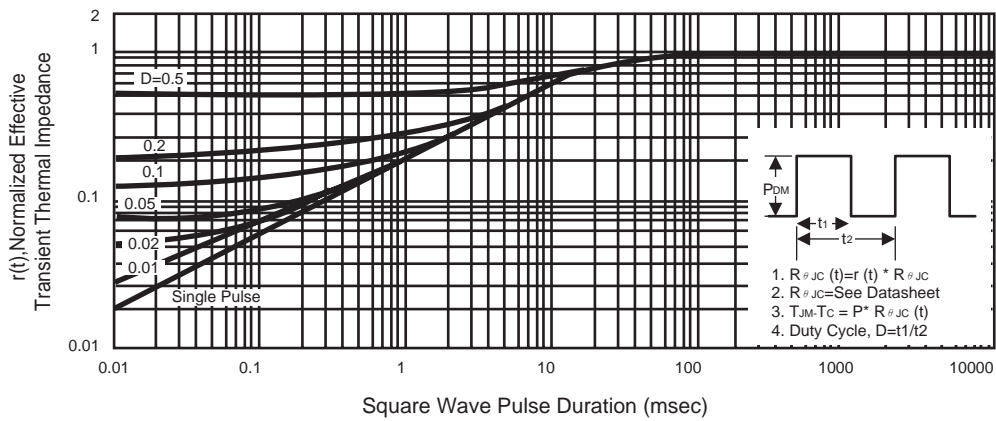


Figure 13. Normalized Thermal Transient Impedance Curve