



CEP740N/CEB740N ☐ CEF740N

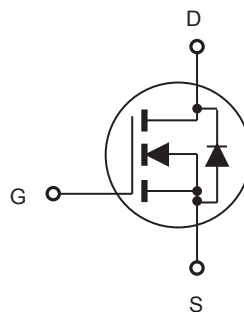
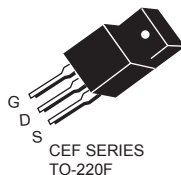
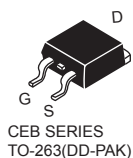
N-Channel Enhancement Mode Field Effect Transistor

PRELIMINARY

FEATURES

Type	V _{DSS}	R _{DS(ON)}	I _D	@V _{GS}
CEP740N	400V	550mΩ	10A	10V
CEB740N	400V	550mΩ	10A	10V
CEF740N	400V	550mΩ	10A ^e	10V

- Super high dense cell design for extremely low R_{DS(ON)}.
- High power and current handling capability.
- Lead free product is acquired.



ABSOLUTE MAXIMUM RATINGS $T_C = 25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Limit		Units
		TO-220/263	TO-220F	
Drain-Source Voltage	V _{DS}	400		V
Gate-Source Voltage	V _{GS}	±30		V
Drain Current-Continuous	I _D	10	10 ^e	A
Drain Current-Pulsed ^a	I _{DM} ^f	40	40 ^e	A
Maximum Power Dissipation @ $T_C = 25^{\circ}\text{C}$ - Derate above 25°C	P _D	125	40	W
		1	0.32	W/°C
Single Pulsed Avalanche Energy ^d	E _{AS}	458	458	mJ
Single Pulsed Avalanche Current ^d	I _{AS}	10	10	A
Operating and Store Temperature Range	T _J , T _{stg}	-55 to 150		°C

Thermal Characteristics

Parameter	Symbol	Limit		Units
Thermal Resistance, Junction-to-Case	R _{θJC}	1.0	3.1	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	65	°C/W

This is preliminary information on a new product in development now .
Details are subject to change without notice .

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<http://www.cetsemi.com>



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Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

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Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	400			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 400V, V_{GS} = 0V$			50	μA
Gate Body Leakage Current, Forward	I_{GSSF}	$V_{GS} = 30V, V_{DS} = 0V$			100	nA
Gate Body Leakage Current, Reverse	I_{GSSR}	$V_{GS} = -30V, V_{DS} = 0V$			-100	nA
On Characteristics ^b						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	2		4	V
Static Drain-Source	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 6A$		450	550	mΩ
On-Resistance						
Forward Transconductance	g_{FS}	$V_{DS} = 50V, I_D = 6A$		6		S
Dynamic Characteristics ^c						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0\text{ MHz}$		1400		pF
Output Capacitance	C_{oss}			180		pF
Reverse Transfer Capacitance	C_{rss}			65		pF
Switching Characteristics ^c						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 200V, I_D = 10A,$ $V_{GS} = 10V, R_{GEN} = 9.1\Omega$		25	50	ns
Turn-On Rise Time	t_r			30	60	ns
Turn-Off Delay Time	$t_{d(off)}$			175	350	ns
Turn-Off Fall Time	t_f			33	66	ns
Total Gate Charge	Q_g	$V_{DS} = 320V, I_D = 10A,$ $V_{GS} = 10V$		60	78	nC
Gate-Source Charge	Q_{gs}			10		nC
Gate-Drain Charge	Q_{gd}			30		nC
Drain-Source Diode Characteristics and Maximun Ratings						
Drain-Source Diode Forward Current	I_S ^g				10	A
Drain-Source Diode Forward Voltage ^b	V_{SD}	$V_{GS} = 0V, I_S = 10A$ ^h			2	V
Notes :□ a.Repetitive Rating : Pulse width limited by maximum junction temperature . b.Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2% .□ c.Guaranteed by design, not subject to production testing.□ d.L=9.16mH, I _{AS} =10A, V _{DD} = 50V, R _G = 25Ω, Starting T _J = 25°C . e.Limited only by maximum temperature allowed . f.Pulse width limited by safe operating area . g.Full package I _{S(max)} = 5.5A . h.Full package V _{SD} test condition I _S = 5.5A .						



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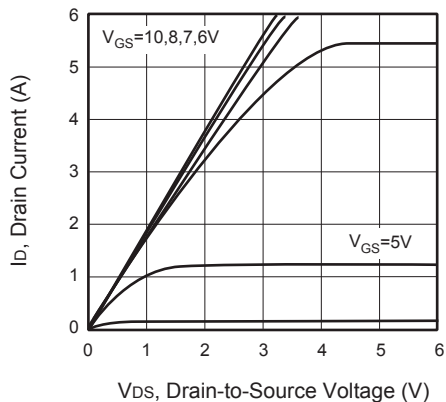


Figure 1. Output Characteristics

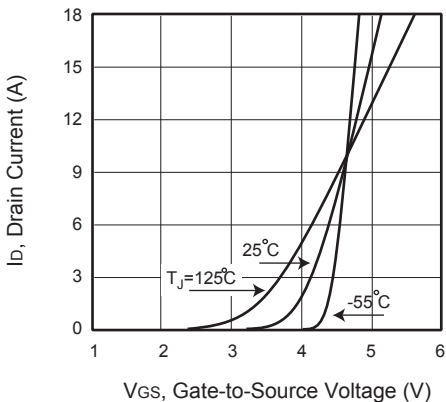


Figure 2. Transfer Characteristics

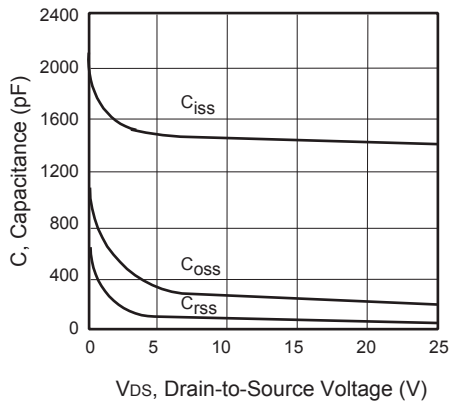


Figure 3. Capacitance

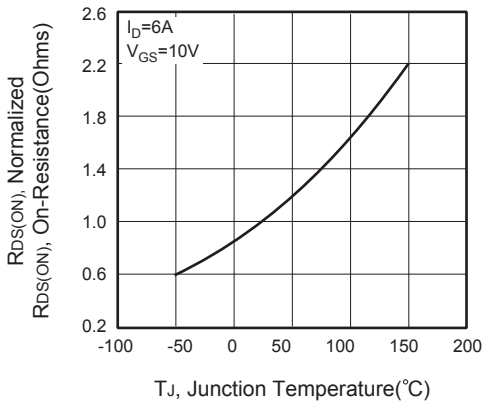


Figure 4. On-Resistance Variation with Temperature

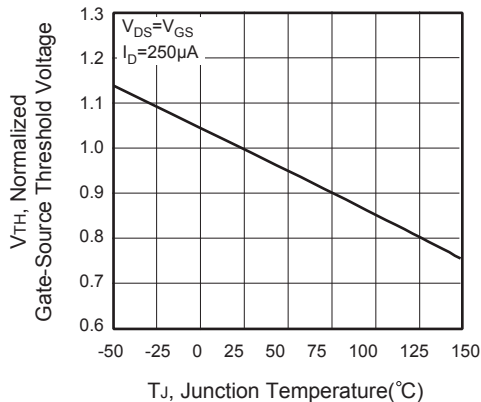


Figure 5. Gate Threshold Variation with Temperature

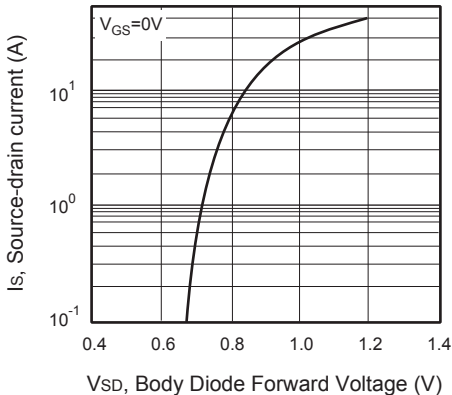


Figure 6. Body Diode Forward Voltage Variation with Source Current



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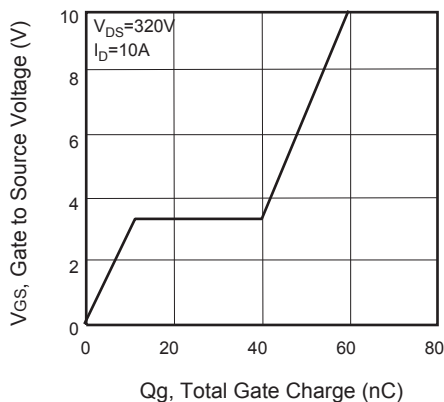


Figure 7. Gate Charge

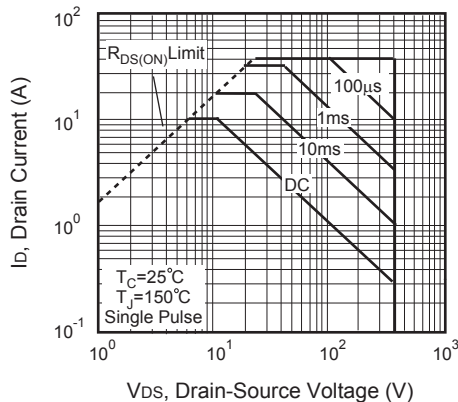


Figure 8. Maximum Safe Operating Area

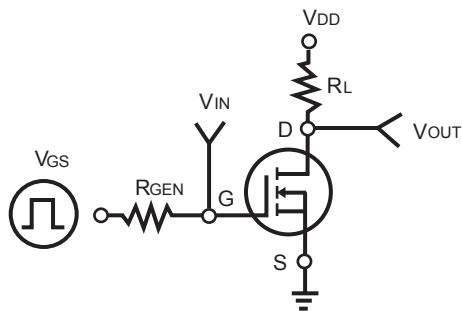


Figure 9. Switching Test Circuit

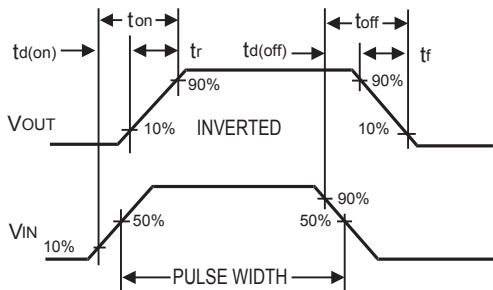


Figure 10. Switching Waveforms

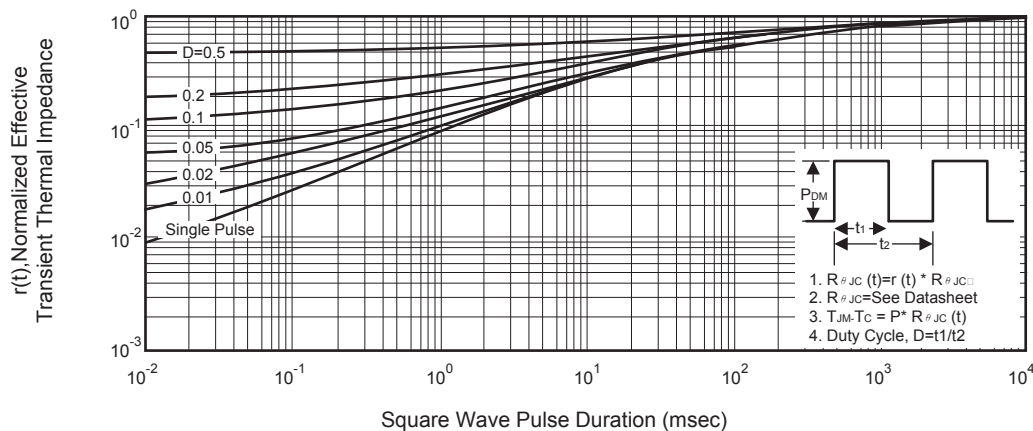


Figure 11. Normalized Thermal Transient Impedance Curve