CEP12N6/CEB12N6
CEF12N6

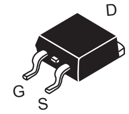
N-Channel Enhancement Mode Field Effect Transistor

PRELIMINARY

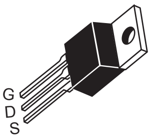
FEATURES

Type	V_{DSS}	$R_{DS(ON)}$	I_D	@V_{GS}
CEP12N6	600V	0.65Ω	12A	10V
CEB12N6	600V	0.65Ω	12A	10V
CEF12N6	600V	0.65Ω	12A [d]	10V

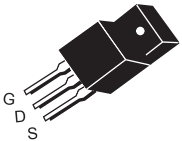
- Super high dense cell design for extremely low $R_{DS(ON)}$.
- High power and current handing capability.
- Lead free product is acquired.



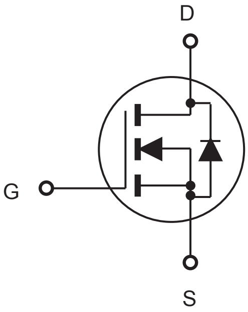
CEB SERIES
TO-263(DD-PAK)



CEP SERIES
TO-220



CEF SERIES
TO-220F



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

Parameter	Symbol	Limit		Units
		TO-220/263	TO-220F	
Drain-Source Voltage	V_{DS}	600		V
Gate-Source Voltage	V_{GS}	±30		V
Drain Current-Continuous	I_D	12	12 [d]	A
Drain Current-Pulsed [a]	I_{DM} [e]	48	48[d]	A
Maximum Power Dissipation @ $T_C = 25^{\circ}C$	P_D	250	60	W
- Derate above 25°C		1.67	0.4	W/°C
Operating and Store Temperature Range	T_J, T_{stg}	-55 to 175		°C

Thermal Characteristics

Parameter	Symbol	Limit		Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.6	2.5	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	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.cet-mos.com

Electrical Characteristics T_C = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250μA	600			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =600V, V_{GS} = 0V			1	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 = 250μA	2		4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 6A		0.53	0.65	Ω
Forward Transconductance	g_{FS}	V_{DS} = 25V, I_D =6A		10		S
Dynamic Characteristics [c]						
Input Capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = 0V, f = 1.0 MHz		2000		pF
Output Capacitance	C_{oss}			220		pF
Reverse Transfer Capacitance	C_{rss}			11		pF
Switching Characteristics [c]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 300V, I_D =12A, V_{GS} = 10V, R_{GEN} = 25Ω		39	78	ns
Turn-On Rise Time	t_r			58	116	ns
Turn-Off Delay Time	$t_{d(off)}$			149	298	ns
Turn-Off Fall Time	t_f			40	80	ns
Total Gate Charge	Q_g	V_{DS} = 400V,I_D = 12A, V_{GS} = 10V		51	66	nC
Gate-Source Charge	Q_{gs}			11		nC
Gate-Drain Charge	Q_{gd}			19		nC
Drain-Source Diode Characteristics and Maximun Ratings						
Drain-Source Diode Forward Current	I_S [f]				12	A
Drain-Source Diode Forward Voltage [b]	V_{SD} [g]	V_{GS} = 0V, I_S = 12A			1.4	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.Limited only by maximum temperature allowed .
e.Pulse width limited by safe operating area .
f.Full package $I_{S(max)}$ =6A .
g.Full package V_{SD} test condition I_S =6A .

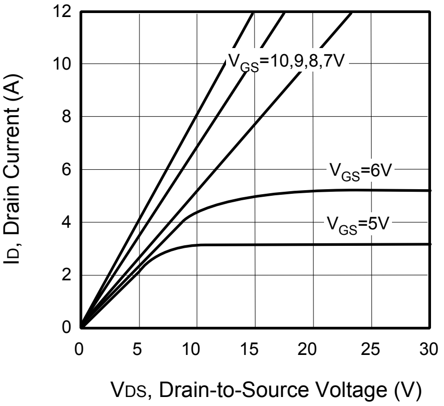

Figure 1. Output Characteristics

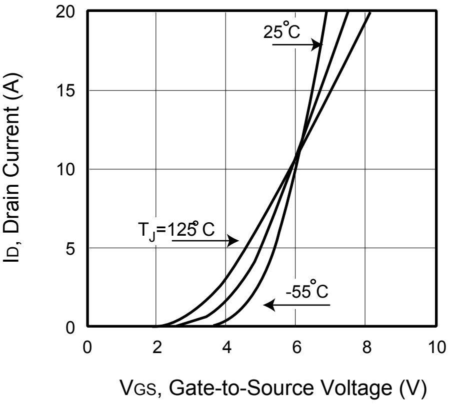

Figure 2. Transfer Characteristics

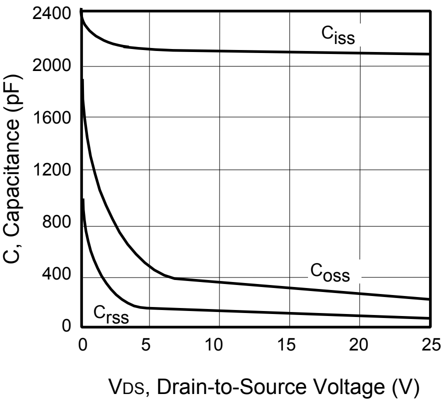

Figure 3. Capacitance

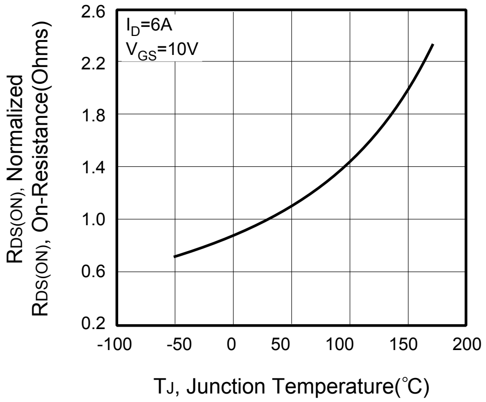

Figure 4. On-Resistance Variation with Temperature

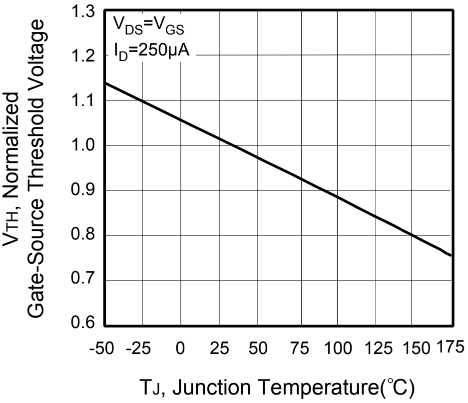

Figure 5. Gate Threshold Variation with Temperature

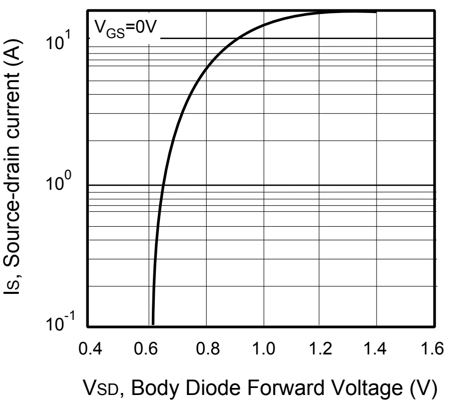

Figure 6. Body Diode Forward Voltage Variation with Source Current

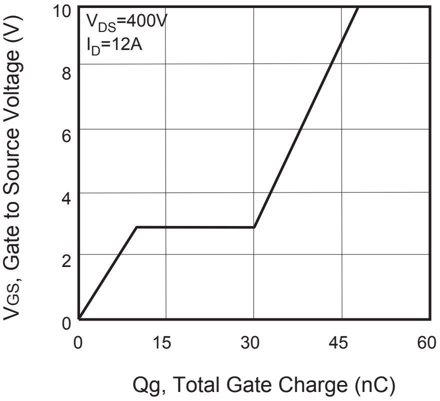

Figure 7. Gate Charge

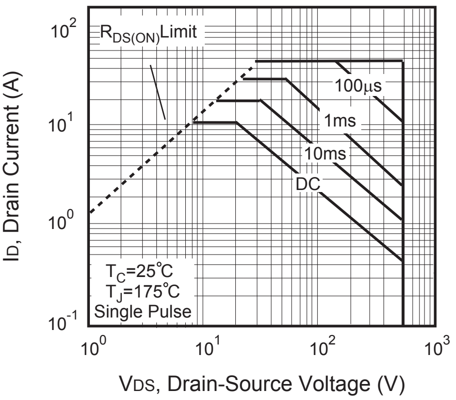

Figure 8. Maximum Safe Operating Area

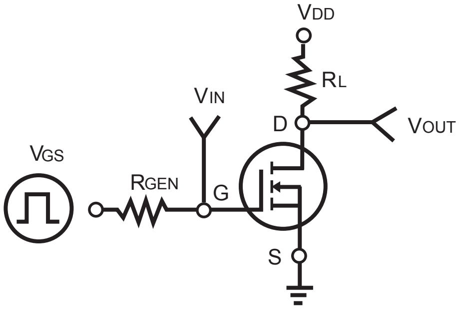

Figure 9. Switching Test Circuit

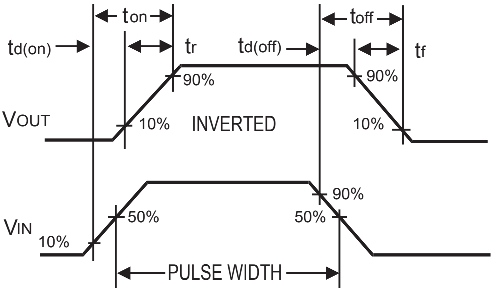

Figure 10. Switching Waveforms

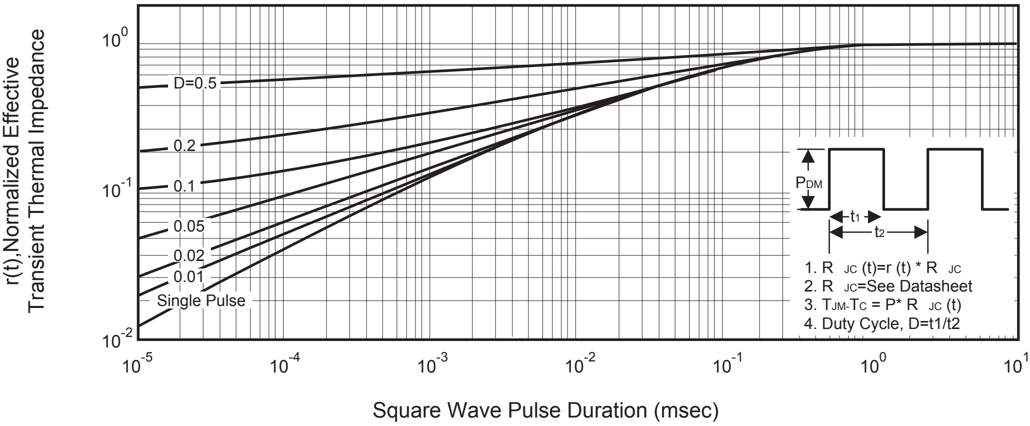

Figure 11. Normalized Thermal Transient Impedance Curve