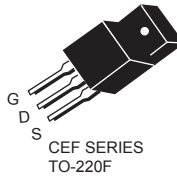


N-Channel Enhancement Mode Field Effect Transistor

FEATURES

Type	V _{DSS}	R _{DS(ON)}	I _D	@V _{GS}
CEP85N75	75V	12mΩ	86A	10V
CEB85N75	75V	12mΩ	86A	10V
CEF85N75	75V	12mΩ	86A ^e	10V

- Super high dense cell design for extremely low R_{DS(ON)}.
- High power and current handling capability.
- Lead free product is acquired.
- TO-220 & TO-263 package & TO-220F full-pak for through hole.



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}	75		V
Gate-Source Voltage	V _{GS}	±30		V
Drain Current-Continuous	I _D	86	86 ^e	A
Drain Current-Pulsed ^a	I _{DM} ^f	344	344 ^e	A
Maximum Power Dissipation @ T _C = 25°C - Derate above 25°C	P _D	200	75	W
		1.33	0.5	W/°C
Single Pulsed Avalanche Energy ^d	E _{AS}	880	880	mJ
Single Pulsed Avalanche Current ^d	I _{AS}	45	45	A
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 _{θJC}	0.75	2	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	65	°C/W



CEP85N75/CEB85N75 CEF85N75

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	75			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 75V, V_{GS} = 0V$			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	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	2		4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 40A$		10	12	m Ω
Dynamic Characteristics^c						
Forward Transconductance	g_{FS}	$V_{DS} = 15V, I_D = 40A$		45		S
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0\text{ MHz}$		3500		pF
Output Capacitance	C_{oss}			715		pF
Reverse Transfer Capacitance	C_{rss}			70		pF
Switching Characteristics^c						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 37.5V, I_D = 45A, V_{GS} = 10V, R_{GEN} = 4.7\Omega$		28	56	ns
Turn-On Rise Time	t_r			9	18	ns
Turn-Off Delay Time	$t_{d(off)}$			83	166	ns
Turn-Off Fall Time	t_f			10	20	ns
Total Gate Charge	Q_g	$V_{DS} = 60V, I_D = 75A, V_{GS} = 10V$		90	119	nC
Gate-Source Charge	Q_{gs}			19		nC
Gate-Drain Charge	Q_{gd}			23		nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Current	I_S				86	A
Drain-Source Diode Forward Voltage ^b	V_{SD}	$V_{GS} = 0V, I_S = 40A$			1.5	V
Notes : □ a.Repetitive Rating : Pulse width limited by maximum junction temperature b.Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$. □ c.Guaranteed by design, not subject to production testing. d.L = 0.87mH, $I_{AS} = 45A, V_{DD} = 38V, R_G = 25\Omega$, Starting $T_J = 25\text{ C}$. □ e.Limited only by maximum temperature allowed . f. Pulse width limited by safe operating area .						



CEP85N75/CEB85N75 CEF85N75

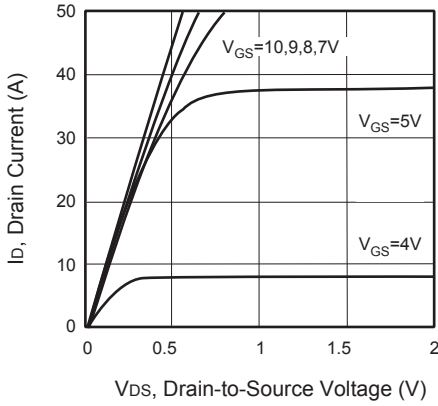


Figure 1. Output Characteristics

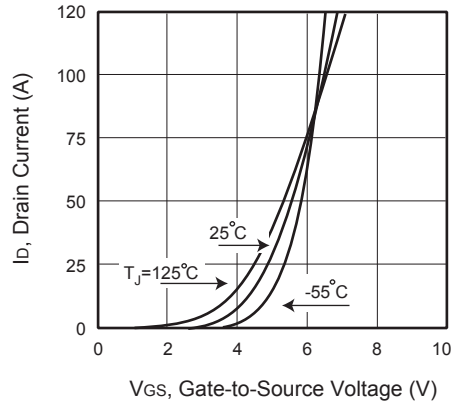


Figure 2. Transfer Characteristics

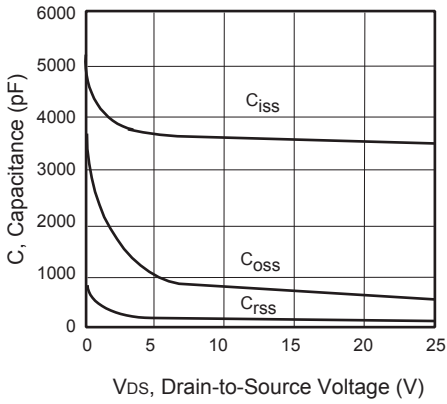


Figure 3. Capacitance

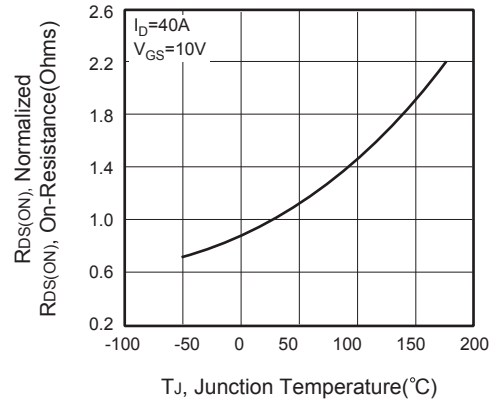


Figure 4. On-Resistance Variation with Temperature



Figure 5. Gate Threshold Variation with Temperature

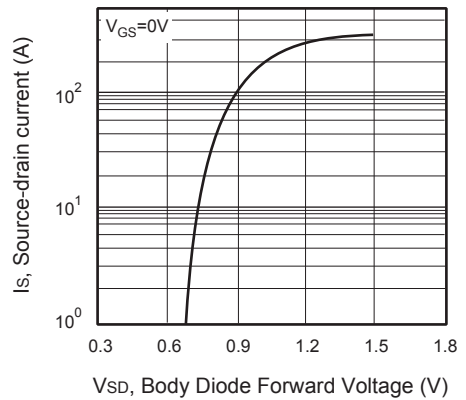


Figure 6. Body Diode Forward Voltage Variation with Source Current

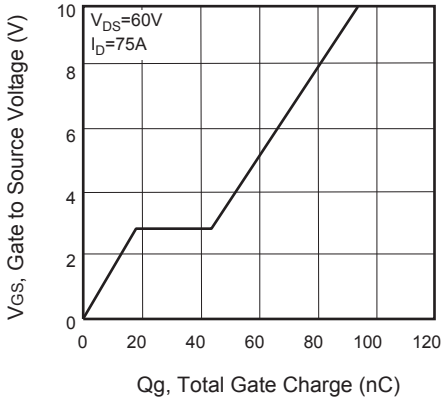


Figure 7. Gate Charge

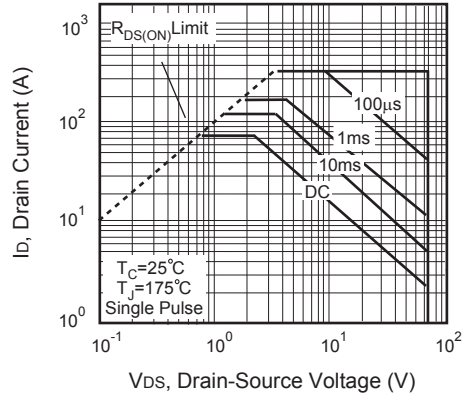


Figure 8. Maximum Safe Operating Area



Figure 9. Switching Test Circuit



Figure 10. Switching Waveforms

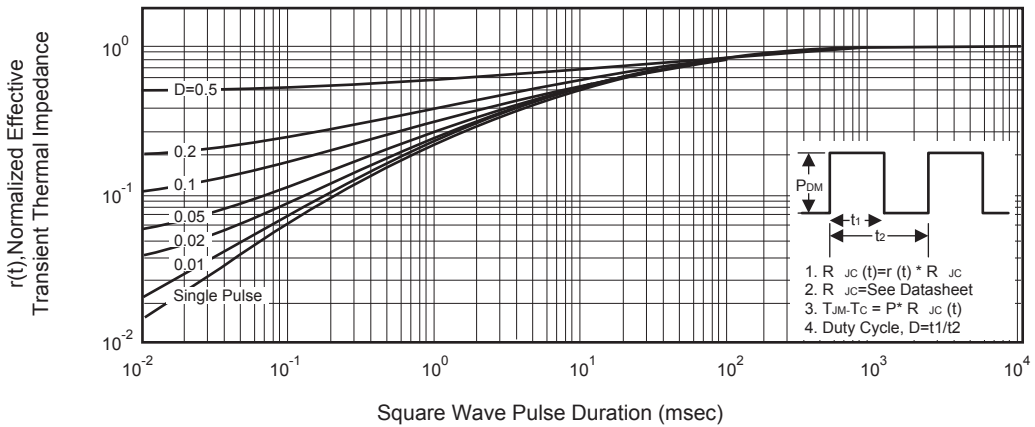


Figure 11. Normalized Thermal Transient Impedance Curve