

CEP8060R/CEB8060R

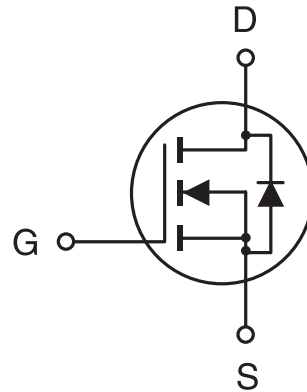
PRELIMINARY

N-Channel Enhancement Mode Field Effect Transistor

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FEATURES

- 60V , 80.0A , $R_{DS(ON)}=10.0m\Omega$ @ $V_{GS}=10V$.
- Super high dense cell design for extremely low $R_{DS(ON)}$.
- High power and current handling capability.
- TO-220 & TO-263 package.



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous -Pulsed	I_D	80	A
	I_{DM}	225	A
Drain-Source Diode Forward Current	I_S	80	A
Maximum Power Dissipation @ $T_c=25^{\circ}C$ Derate above $25^{\circ}C$	P_D	150	W
		1	W/ $^{\circ}C$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to 175	$^{\circ}C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^{\circ}C/W$

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ELECTRICAL CHARACTERISTICS (Tc=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
DRAIN-SOURCE AVALANCHE RATING^a						
Single Pulse Drain-Source Avalanche Energy	EAS	VDD=25V, ID=150A		430		mJ
Maximum Drain-Source Avalanche Current	IAS	L=25μH		150		A
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BVDSS	VGS=0V, ID=250μA	60			V
Zero Gate Voltage Drain Current	IDSS	VDS=60V, VGS=0V			25	μA
Gate-Body Leakage	IGSS	VGS=±20V, VDS=0V			±100	nA
ON CHARACTERISTICS^a						
Gate Threshold Voltage	VGS(th)	VDS=VGS, ID=250μA	2	2.6	4	V
Drain-Source On-State Resistance	RDS(ON)	VGS=10V, ID=40A		9.0	10	mΩ
On-State Drain Current	ID(ON)	VGS=10V, VDS=10V	60			A
Forward Transconductance	gFS	VDS=10V, ID=40A		38		S
SWITCHING CHARACTERISTICS^b						
Turn-On Delay Time	tD(ON)	VDD=30V, ID=75A, VGS=10V,		20	30	ns
Rise Time	tr			250	400	ns
Turn-Off Delay Time	tD(OFF)			50	80	ns
Fall Time	tf			135	200	ns
Total Gate Charge	Qg	VDS=48V, ID=75A, VGS=10V		61	115	nC
Gate-Source Charge	Qgs			15		nC
Gate-Drain Charge	Qgd			18		nC

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

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Parameter	Symbol	Condition	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS ^b						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} = 0V f =1.0MHz		2532	3300	pF
Output Capacitance	C _{OSS}			924	1200	pF
Reverse Transfer Capacitance	C _{RSS}			148	190	pF
DRAIN-SOURCE DIODE CHARACTERISTICS ^a						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S =37.5A		0.9	1.3	V

Notes

a. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

b. Guaranteed by design, not subject to production testing.

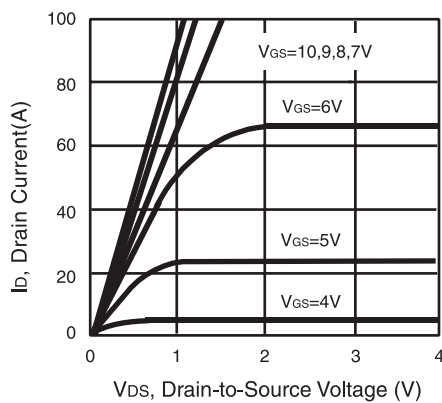


Figure 1. Output Characteristics

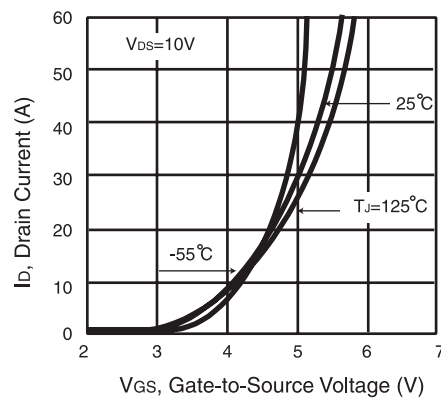


Figure 2. Transfer Characteristics

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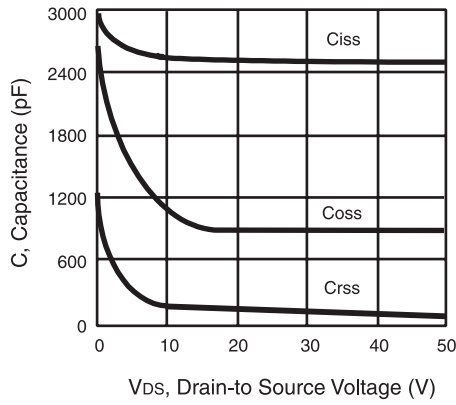


Figure 3. Capacitance

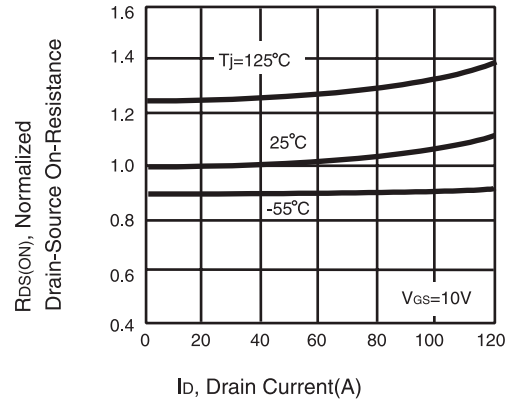


Figure 4. On-Resistance Variation with Drain Current and Temperature

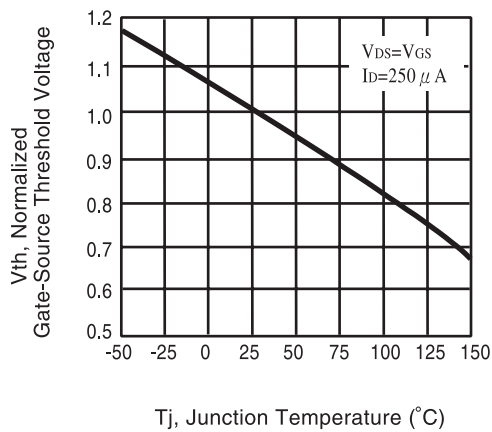


Figure 5. Gate Threshold Variation with Temperature

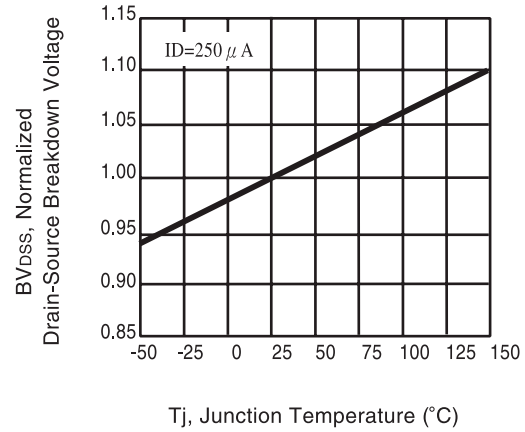


Figure 6. Breakdown Voltage Variation with Temperature

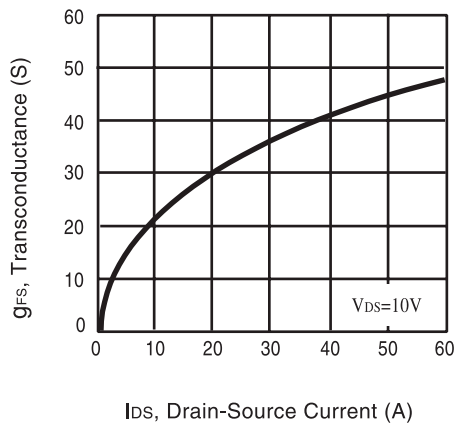


Figure 7. Transconductance Variation with Drain Current

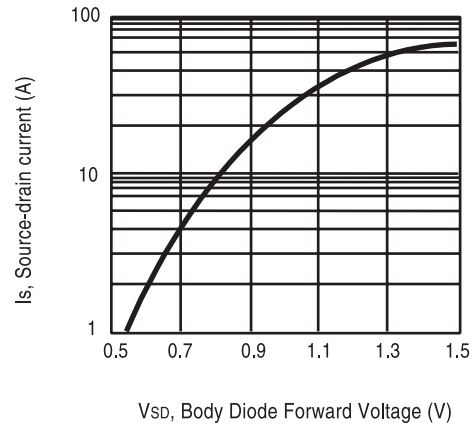


Figure 8. Body Diode Forward Voltage Variation with Source Current

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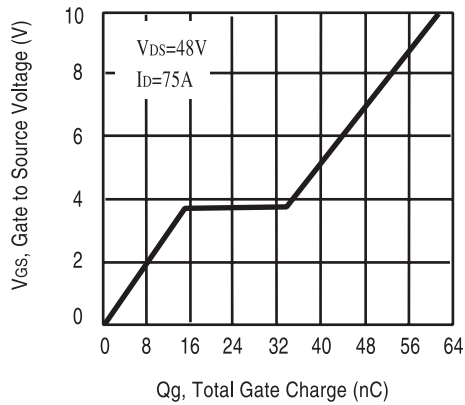


Figure 9. Gate Charge

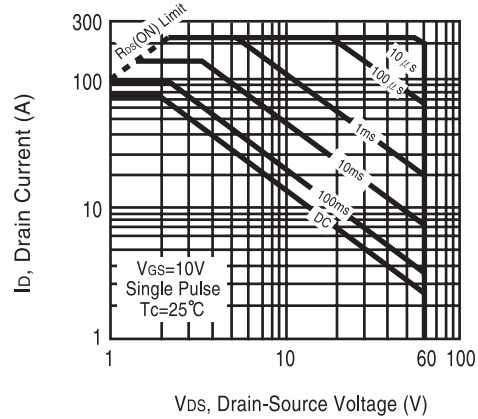


Figure 10. Maximum Safe Operating Area

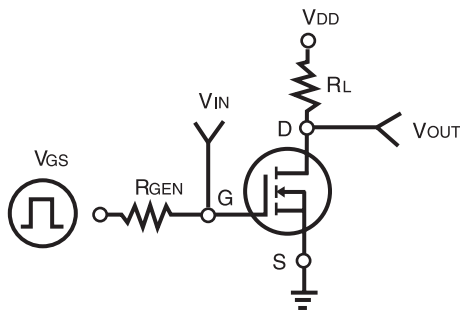


Figure 11. Switching Test Circuit

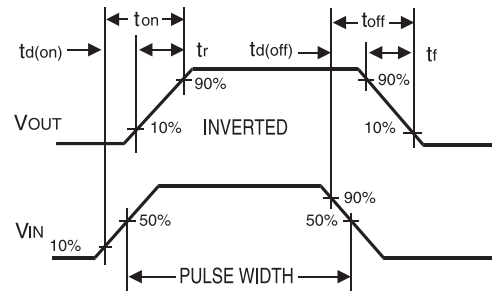


Figure 12. Switching Waveforms

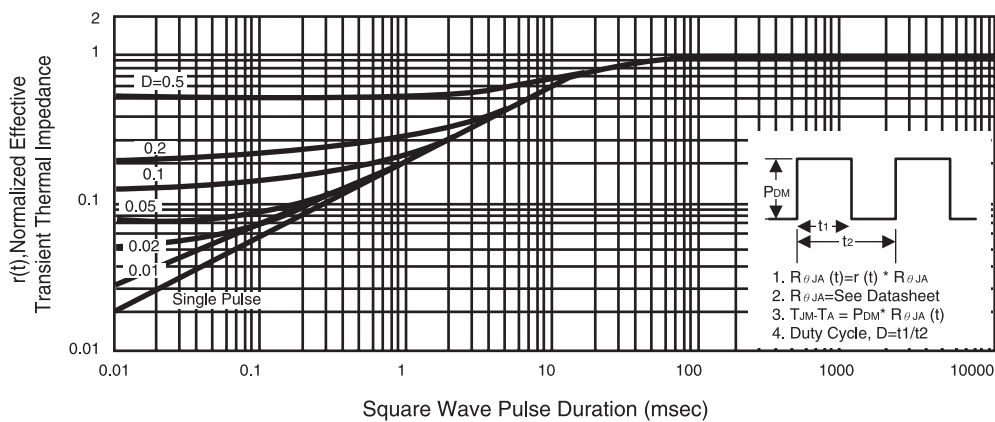


Figure 13. Normalized Thermal Transient Impedance Curve