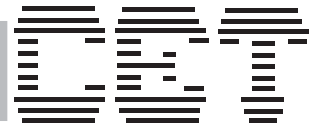


CEP05P03/CEB05P03

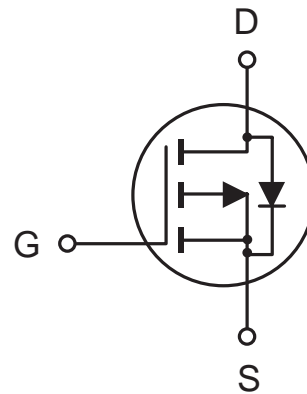


4

Single P-Channel Enhancement Mode MOSFET

FEATURES

- -30V , -4.9A , $R_{DS(ON)}=70m\Omega$ @ $V_{GS}=-10V$
 $R_{DS(ON)}=120m\Omega$ @ $V_{GS}=-4.5V$
- Super high dense cell design for extremely low $R_{DS(ON)}$.
- High power and current handling capability.
- TO-220 package for through hole.



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 @T _J =125°C -Pulsed	I _D	±4.9	A
	I _{DM}	±30	A
Drain-Source Diode Forward Current	I _S	-1.7	A
Maximum Power Dissipation	P _D	50	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

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

CEP05P03/CEB05P03

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} =-30V, 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	-1.5	-3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-4.9A		42	70	mΩ
		V _{GS} =-4.5V, I _D =-2.0A		78	120	mΩ
On-State Drain Current	I _{D(ON)}	V _{DS} =-5V, V _{GS} =-10V	-20			A
Forward Transconductance	g _{FS}	V _{DS} =-15V, I _D =-4.9A	5			S
DYNAMIC CHARACTERISTICS^b						
Input Capacitance	C _{ISS}	V _{DS} = -15V, V _{GS} = 0V f = 1.0MHz		1040		pF
Output Capacitance	C _{OSS}			420		pF
Reverse Transfer Capacitance	C _{RSS}			150		pF
SWITCHING CHARACTERISTICS^b						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = -15V, I _D = -1A, V _{GEN} = -10V, R _{GEN} = 6Ω		8	15	ns
Rise Time	t _r			11	20	ns
Turn-Off Delay Time	t _{D(OFF)}			23	40	ns
Fall time	t _f			14	25	ns
Total Gate Charge	Q _g	V _{DS} = -15V, I _D = -4.9A, V _{GS} = -10V		22.5	29	nC
Gate-Source Charge	Q _{gs}			2		nC
Gate-Drain Charge	Q _{gd}			6		nC

CEP05P03/CEB05P03

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

4

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS^a						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_s = -1.7A$		-0.79	-1.2	V

Notes

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

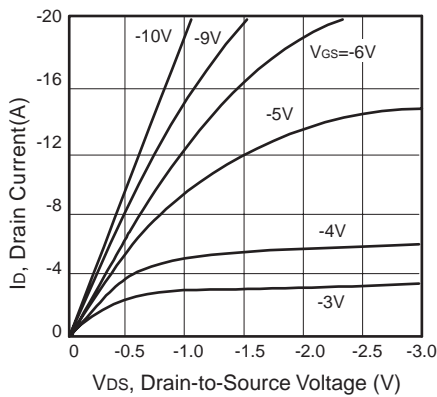


Figure 1. Output Characteristics

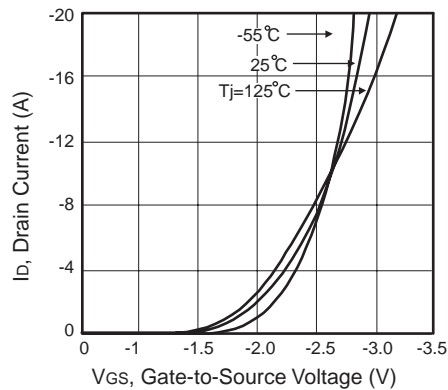


Figure 2. Transfer Characteristics

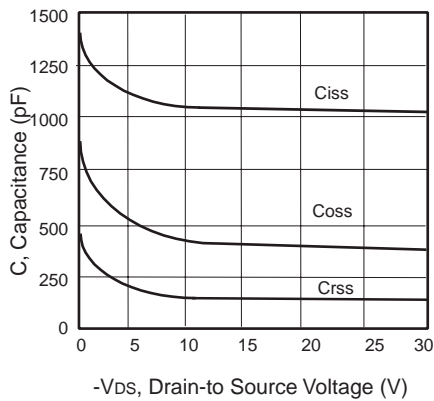


Figure 3. Capacitance

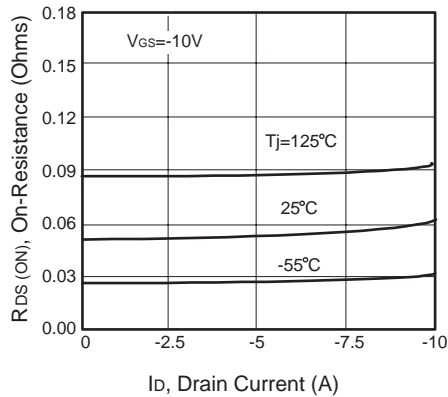


Figure 4. On-Resistance Variation with Drain Current and Temperature

CEP05P03/CEB05P03

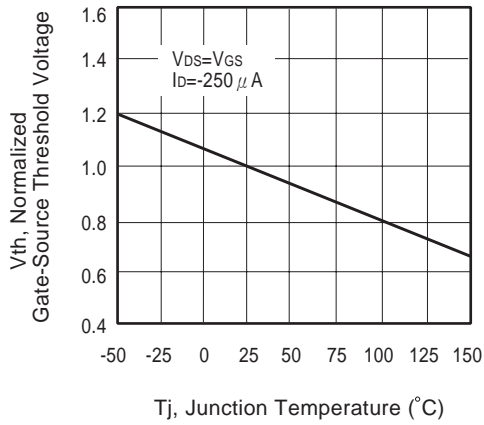


Figure 5. Gate Threshold Variation with Temperature

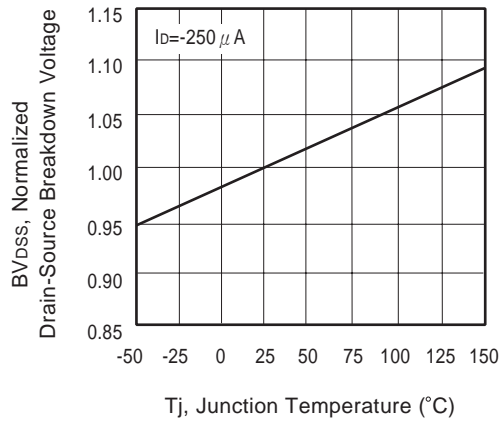


Figure 6. Breakdown Voltage Variation with Temperature

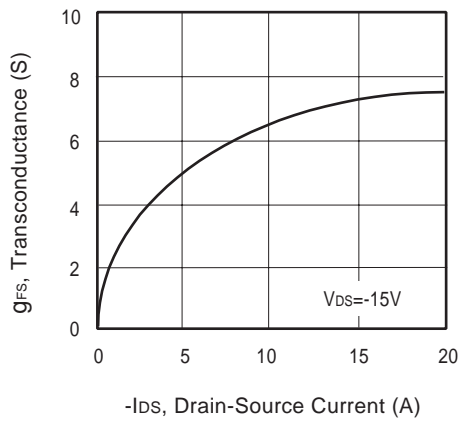


Figure 7. Transconductance Variation with Drain Current

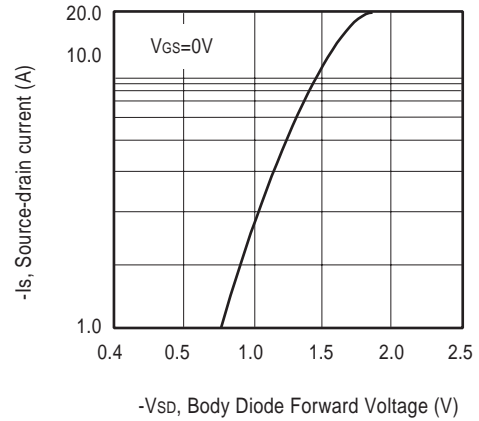


Figure 8. Body Diode Forward Voltage Variation with Source Current

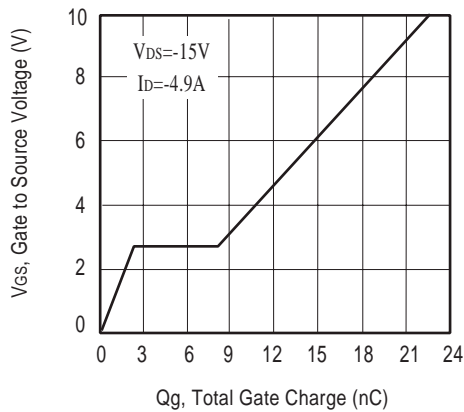


Figure 9. Gate Charge

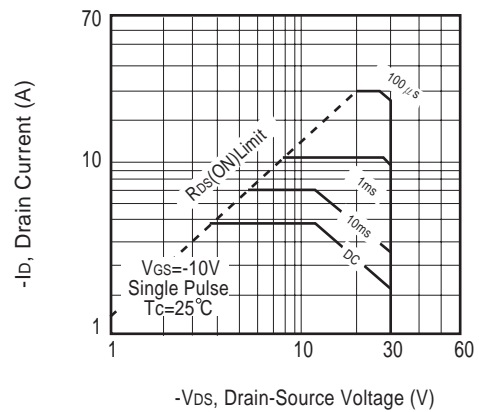


Figure 10. Maximum Safe Operating Area

CEP05P03/CEB05P03

4

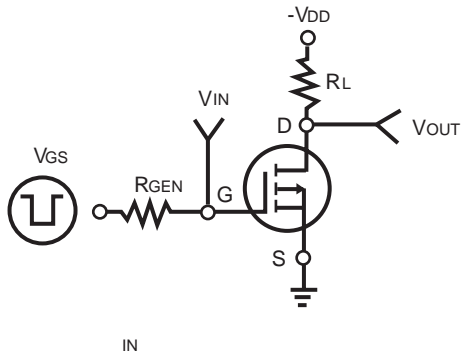


Figure 11. Switching Test Circuit

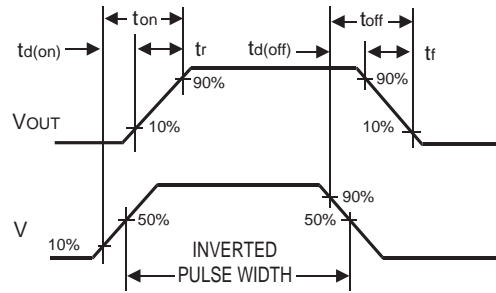


Figure 12. Switching Waveforms

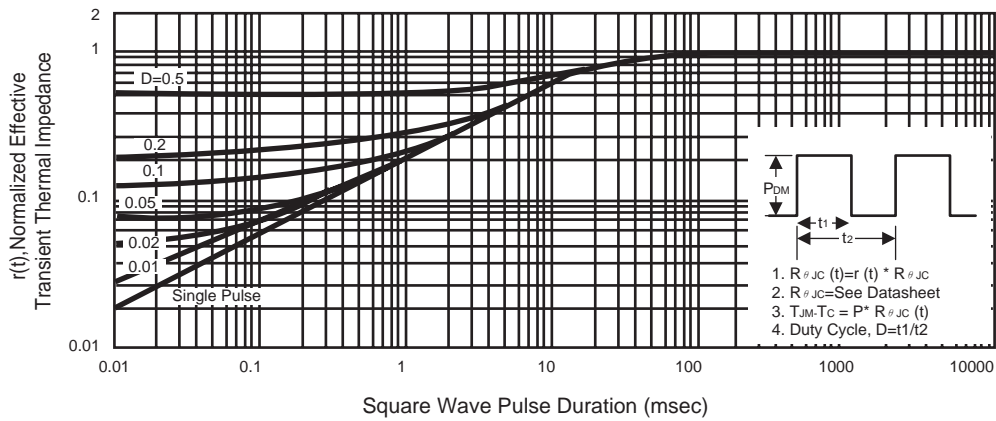


Figure 13. Normalized Thermal Transient Impedance Curve