

CoolMOS™ is a revolutionary technology for high voltage power MOSFETs, designed according to the superjunction (SJ) principle and pioneered by Infineon Technologies. CoolMOS™ CE is a price-performance optimized platform enabling to target cost sensitive applications in Consumer and Lighting markets by still meeting highest efficiency standards. The new series provides all benefits of a fast switching Superjunction MOSFET while not sacrificing ease of use and offering the best cost down performance ratio available on the market.

- Extremely low losses due to very low FOM $R_{dson} \cdot Q_g$ and Eoss
- Very high commutation ruggedness
- Easy to use/drive
- Pb-free plating, Halogen free mold compound
- Qualified for standard grade applications

PFC stages, hard switching PWM stages and resonant switching stages for e.g. PC Silverbox, Adapter, LCD & PDP TV and indoor lighting.

*Pea e e F MOSFET a a e g e e ffe e bead e ga e
e a a e e e ge e a ec e ded*

		Ω

at $T = 25^{\circ}\text{C}$, unless otherwise specified

	b					
	b_{pulse}					
	E_S					
	E_R					
	I_{AR}					
						$V_S = 0 \dots 400\text{V}$
	V_S					
	t_{ot}					$T = 25^{\circ}\text{C}$
	f, f_{tg}					
	t					$T = 25^{\circ}\text{C}$
	t_{pulse}					
						$V_S = 0 \dots 400\text{V}, t_D \leq t, T = 25^{\circ}\text{C}$
					μ	$V_S = 0 \dots 400\text{V}, t_D \leq t, T = 25^{\circ}\text{C}$
	V_{SO}					$V_{ms}, T = 25^{\circ}\text{C}, t = 1\text{min}$

	R_{JC}					
	R_{JA}					
	T_{old}					

³⁾ $V_{\text{Clink}} = 400\text{V}$; $V_{S,\text{peak}} < V_{R(\text{DSS})}$; identical low side and high side switch with identical R

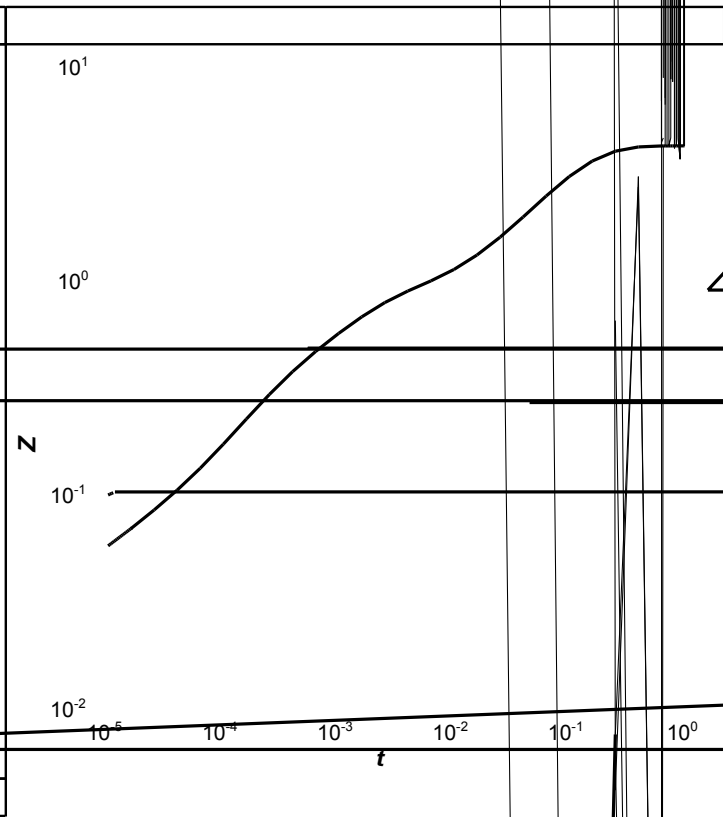
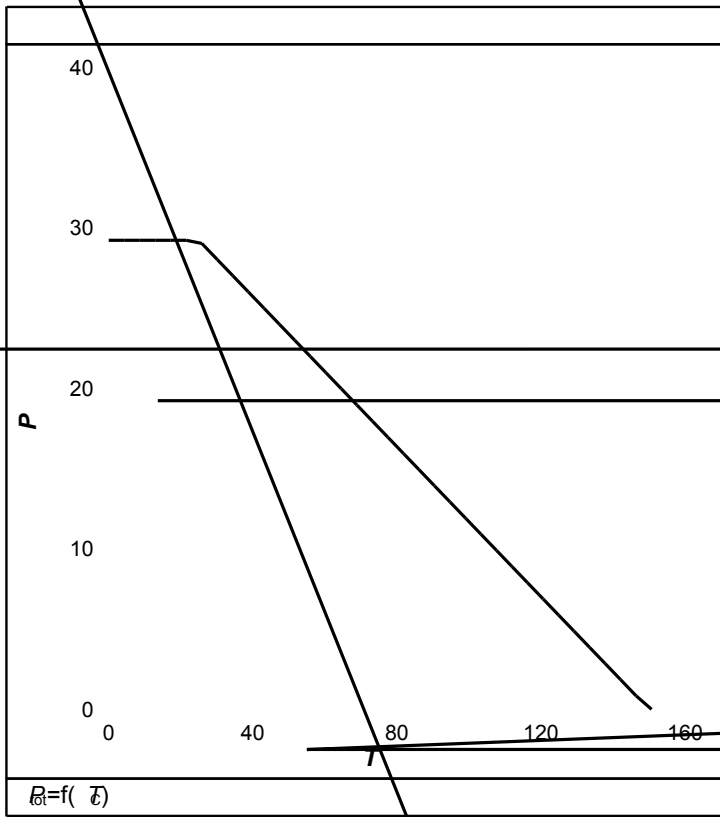
	$V_{R(DSS)}$				$V_S=0V, I_b=1mA$
	$V_{GS(th)}$				$V_S=V_S, I_b=0.26mA$
	b_{SS}			μ	$V_S=500V, V_{GS}=0V, f=25^\circ C$ $V_S=500V, V_{GS}=0V, f=150^\circ C$
	C_{SS}				$V_S=20V, V_{GS}=0V$
	$R_{G(on)}$			Ω	$V_D=13V, I_b=3.2A, f=25^\circ C$ $V_D=13V, I_b=3.2A, f=150^\circ C$
	R			Ω	$f=1 MHz, \text{open drain}$

	C_{es}				$V_S=0V, V_D=100V, f=1MHz$
	C_{SS}				$V_S=0V, V_D=100V, f=1MHz$
	$C_{(er)}$				$V_S=0V, V_D=0...400V$
	$C_{(tr)}$				$I_b=\text{constant}, V_S=0V, V_D=0...400V$
	$d(on)$				$V_D=400V, V_S=13V, I_b=3.9A,$ $R_G=3.4\Omega$
	r				$V_D=400V, V_S=13V, I_b=3.9A,$ $R_G=3.4\Omega$
	$d(off)$				$V_D=400V, V_S=13V, I_b=3.9A,$ $R_G=3.4\Omega$
	f				$V_D=400V, V_S=13V, I_b=3.9A,$ $R_G=3.4\Omega$

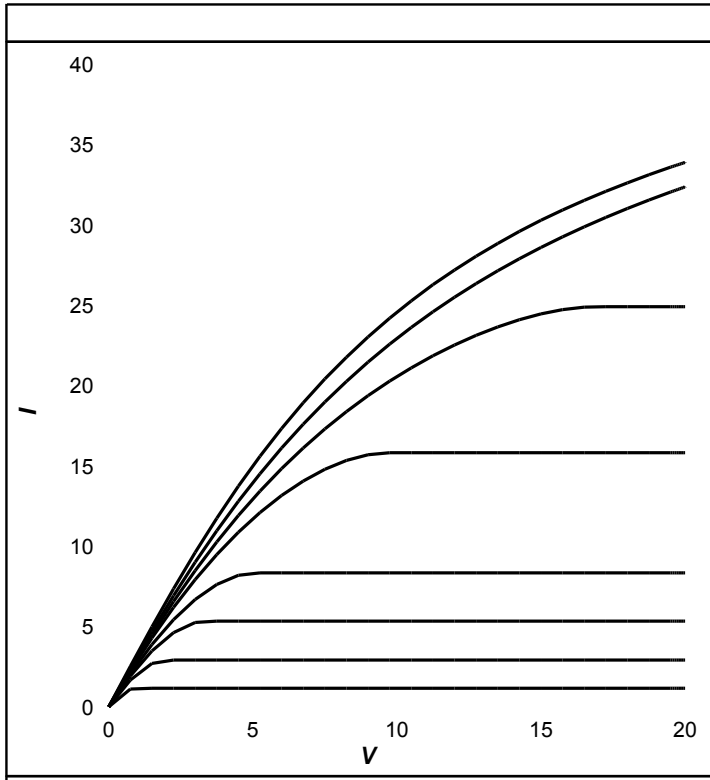
	Q_{gs}				$V_D=400V, I_b=3.9A, V_S=0 \text{ to } 10V$
	Q_{gd}				$V_D=400V, I_b=3.9A, V_S=0 \text{ to } 10V$
	Q_g				$V_D=400V, I_b=3.9A, V_S=0 \text{ to } 10V$
	$V_{plateau}$				$V_D=400V, I_b=3.9A, V_S=0 \text{ to } 10V$

1) $C_{(er)}$ is a fixed capacitance that gives the same stored energy as C_{SS} while V_S is rising from 0 to 400V
2) $C_{(tr)}$ is a fixed capacitance that gives the same charging time as C_{SS} while V_S is rising from 0 to 400V

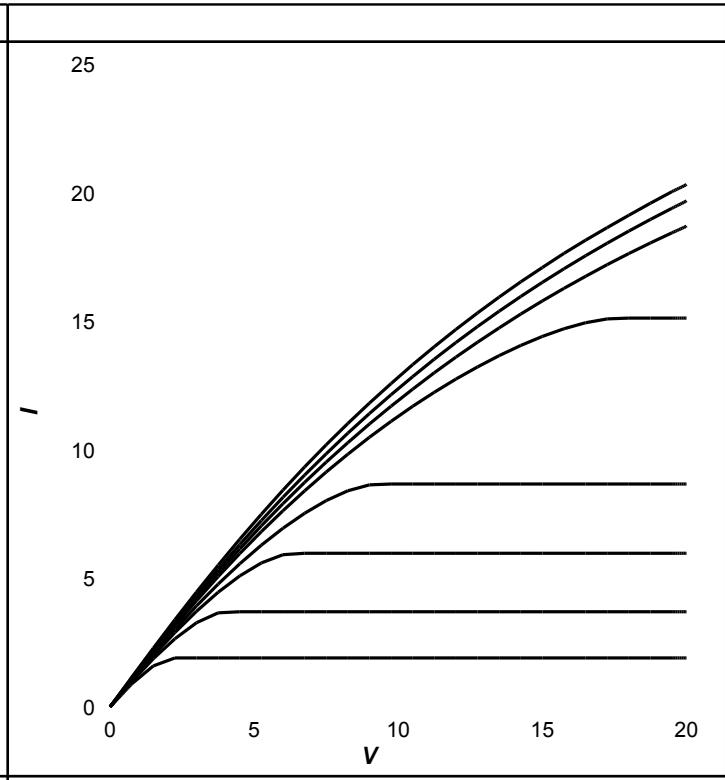
	V_D					$V_S=0V, I=3.9A, T=25^{\circ}C$
	r_r					$V=400V, I=3.9A, d_F/d =100A/\mu s$
	Q					$V=400V, I=3.9A, d_F/d =100A/\mu s$
	t_{rm}					$V=400V, I=3.9A, d_F/d =100A/\mu s$



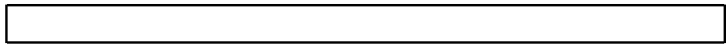
$P=f(t)$



$b=f(V_s)$; $T=25\text{ }^\circ\text{C}$; parameter: V_s

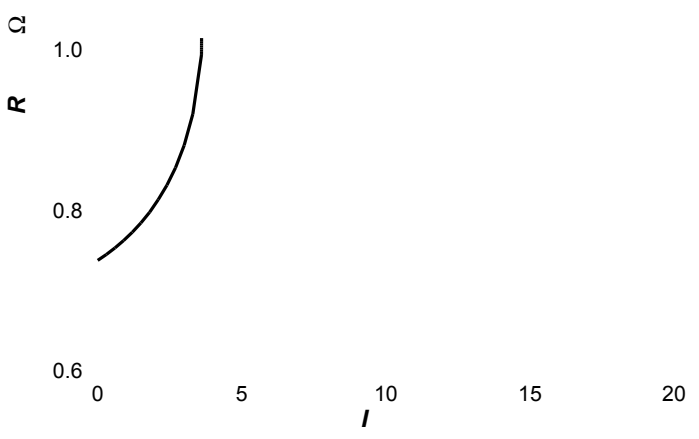


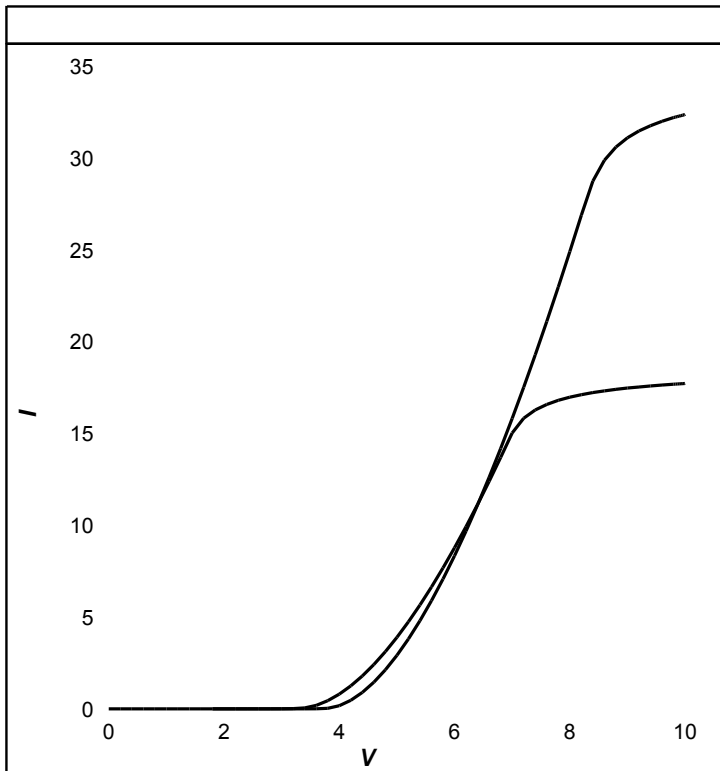
$b=f(V_s)$; $T=125\text{ }^\circ\text{C}$; parameter: V_s



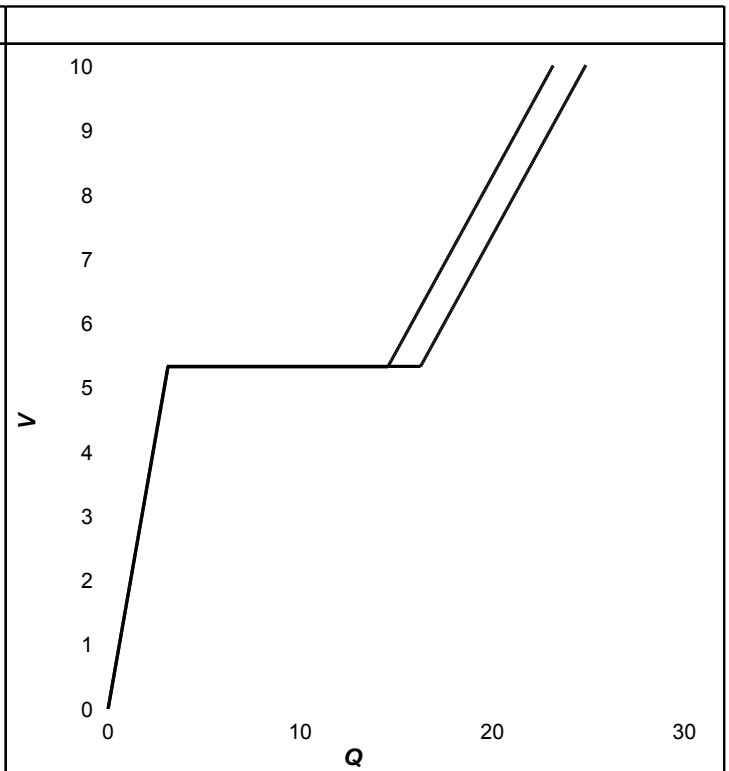
1.4

1.2

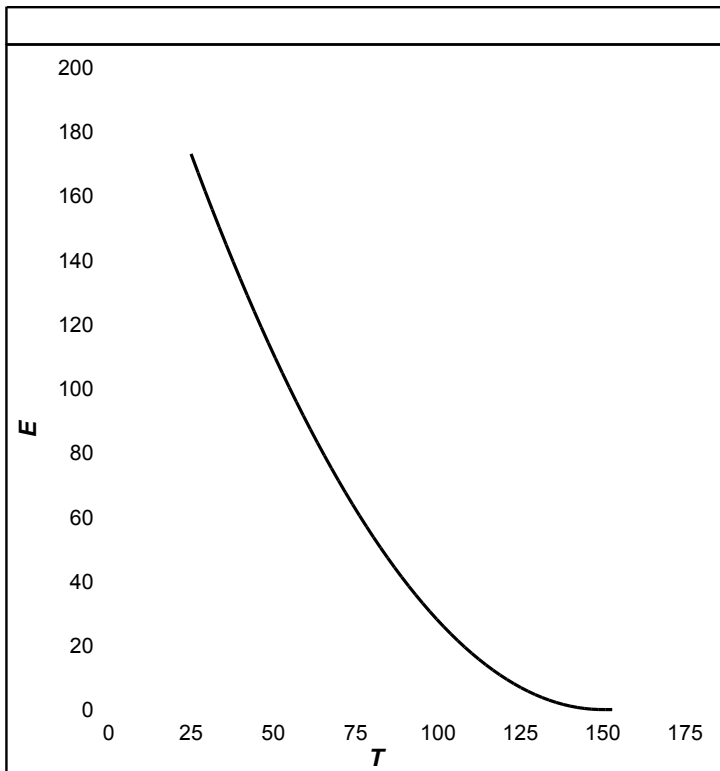




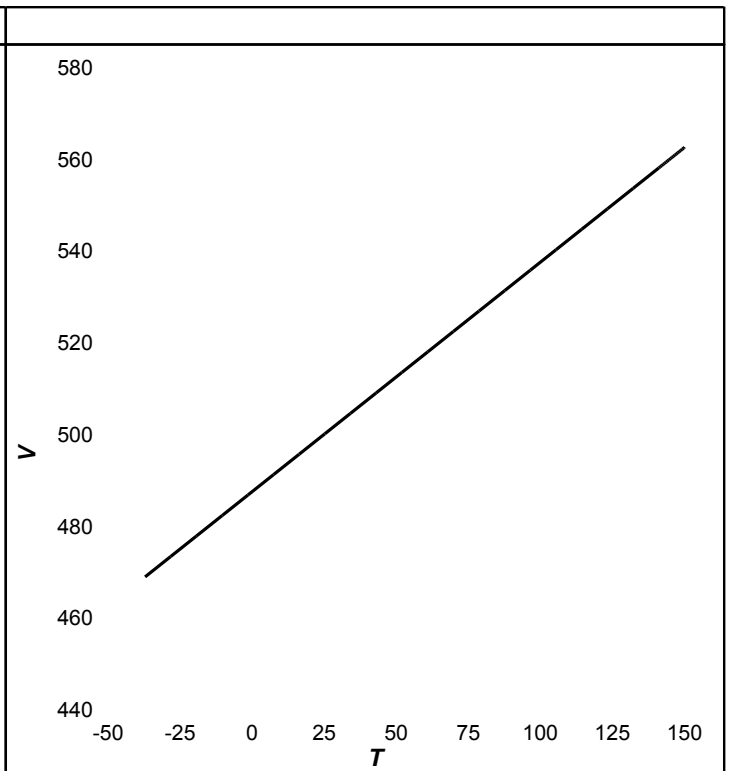
$I = f(V_S)$; $V_S = 20V$; parameter: I



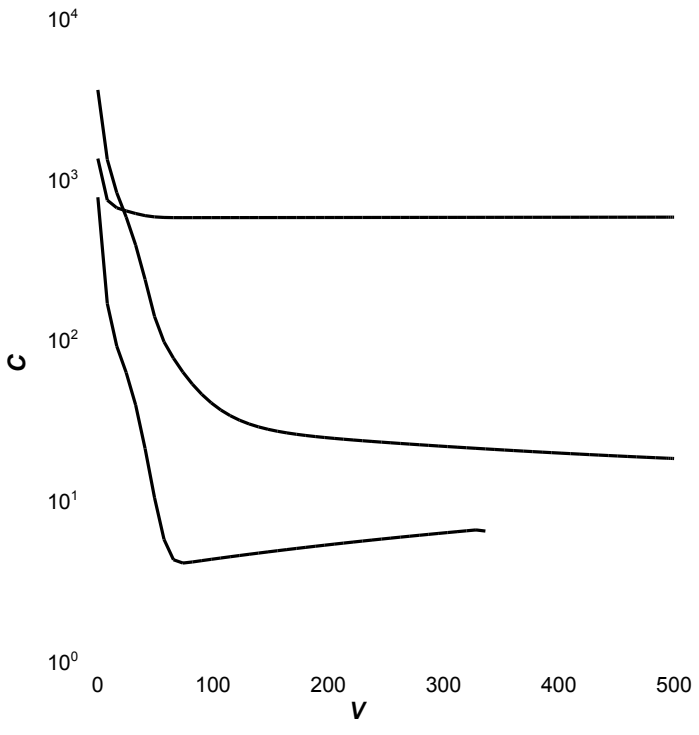
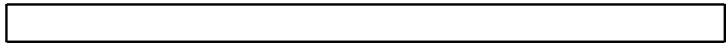
$V_S = f(Q_{gate})$; $I = 3.9 A$ pulsed; parameter: V_D



$E_S = f(T)$; $I = 4 A$; $V_D = 50 V$



$V_{R(DSS)} = f(T)$; $I = 1 mA$



‡ www.infineon.com

‡ www.infineon.com

AURIX™, C166™, CanPAK™, CIPOS™, CoolGaN™, CoolMOS™, CoolSET™, CoolSiC™, CORECONTROL™, CROSSAVE™, DAVE™, DI-POL™, DrBlade™, EasyPIM™, EconoBRIDGE™, EconoDUAL™, EconoPACK™, EconoPIM™, EiceDRIVER™, eupec™, FCOS™, HITFET™, HybridPACK™, Infineon™, ISOFACE™, IsoPACK™, i-Wafer™, MIPAQ™, ModSTACK™, my-d™, NovalithIC™, OmniTune™, OPTIGA™, OptiMOS™, ORIGA™, POWERCODE™, PRIMARION™, PrimePACK™, PrimeSTACK™, PROFET™, PRO-SIL™, RASIC™, REAL3™, ReverSave™, SatRIC™, SIEGET™, SIPMOS™, SmartLEWIS™, SOLID FLASH™, SPOC™, TEMPFET™, thinQ!™, TRENCHSTOP™, TriCore™.

Trademarks updated August 2015

All referenced product or service names and trademarks are the property of their respective owners.

Any information within this document that you feel is wrong, unclear or missing at all? Your feedback will help us to continuously improve the quality of this document. Please send your proposal (including a reference to this document) to:

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office ().

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.
 The Infineon Technologies component described in this Data Sheet may be used in life-support devices or systems and/or automotive, aviation and aerospace applications or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support, automotive, aviation and aerospace device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.