CMH75N65EH5

650V,75A Field Stop Trench IGBT

General Description

This IGBT is produced using advanced Cmos's Field Stop Trench IGBT Technology, which provides high switching series and excellent quality.
This device is for PFC, UPS & Inverter applications.

Product Summary

VCES	IC
650V	75A

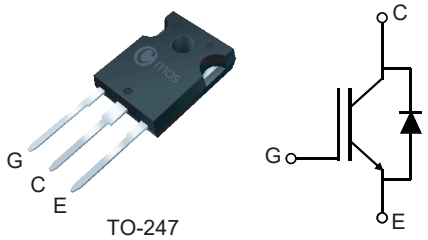
Applications

- PFC
- UPS
- Inverter

Features

- Easy parallel switching capability due to positive temperature coefficient in VCEsat
- Low VCEsat，fast switching

TO-247 Pin Configuration



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Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	650	V
V_{GES}	Gate-Emitter Voltage	±20	V
I_C@T_C=25℃	Collector Current	90	A
I_C@T_C=100℃		75	A
I_{CM}	Pulsed Collector Current *	300	A
I_F@T_C=100℃	Diode Continuous Forward Current	75	A
I_{FM}	Diode Maximum Forward Current	300	A
P_D@T_C=25℃	Maximum Power Dissipation	395	W
P_D@T_C=100℃	Maximum Junction Temperature	197	W
T_{Vj}	Operating Junction temperature range	-55 to 175	℃
T_{stg}	Storage temperature range	-55 to 150	℃

* Repetitive rating : Pulse width limited by max. junction temperature

Thermal Data

Symbol	Parameter	Typ.	Max.	Units
R_{thJA}	Thermal Resistance, Junction-Ambient	---	40	℃/W
R_{thJC}	Thermal Resistance, IGBT Junction-Case	---	0.38	℃/W
R_{thJC}	Thermal Resistance, Diode Junction-Case	---	0.45	℃/W

Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Characteristic	Test Condition	Min.	Typ.	Max.	Unit
Static						
BV_{CES}	Collector-Emitter Breakdown Voltage	V_{CE}=0V , I_C=1mA	650	---	---	V
I_{CES}	Collector Cut-off Current	V_{GE}=0V , V_{CE}=650V , T_{vj} = 25℃	---		0.01	mA
I_{GES}	Gate Leakage Current	V_{CE} =0V , V_{GE}=±20V	---	---	±250	nA
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	V_{CE} = V_{GE} , I_C=1.2mA	4.3	5.3	6.3	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE}=15V, I_C=75A, T_{vj} = 25℃	---	1.47	1.82	V
		V_{GE}=15V, I_C=75A, T_{vj} = 150℃	---	1.69	---	V
Dynamic						
Q_g	Total Gate Charge	V_{CC}=100V, V_{GE}=15V, I_C= 75A	---	180	---	nC
Q_{ge}	Gate-Emitter Charge		---	36	---	
Q_{gc}	Gate-Collector Charge		---	48	---	
$t_{d(on)}$	Turn-On Delay Time	V_{CC}=400V, I_C=75A, V_{GE}=0/15V, R_G=10Ω Inductive Load , T_j = 25℃	---	70.4	---	ns
t_r	Rise Time		---	64	---	
$t_{d(off)}$	Turn-Off Delay Time		---	211.2	---	
t_f	Fall Time		---	67.2	---	
E_{on}	Turn-On Switching Loss		---	2.04	---	mJ
E_{off}	Turn-Off Switching Loss		---	1.33	---	
E_{ts}	Total Switching Loss		---	3.37	---	
$t_{d(on)}$	Turn-On Delay Time	V_{CC}=400V, I_C=75A, V_{GE}=0/15V, R_G=10Ω Inductive Load , T_{vj} = 150℃	---	67.2	---	ns
t_r	Rise Time		---	73.6	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	243.2	---	ns
t_f	Fall Time		---	69	---	ns
E_{on}	Turn-On Switching Loss		---	3.66	---	mJ
E_{off}	Turn-Off Switching Loss		---	1.64	---	mJ
E_{ts}	Total Switching Loss		---	5.3	---	mJ
C_{ies}	Input Capacitance	V_{CE}=25V , V_{GE}=0V , f=1MHz	---	5000	---	pF
C_{oes}	Output Capacitance		---	200	---	
C_{res}	Reverse Transfer Capacitance		---	45	---	

Electrical Characteristic Of Diode

Symbol	Characteristic	Test Condition		Mim.	Typ.	Max.	Unit
V_F	Diode Forward Voltage	I_F = 75A	T_C=25℃	---	1.68	2.15	V
			T_C=150℃	---	1.54	---	
t_{rr}	Diode Reverse Recovery Time	V_R =400V I_F =75A di/dt =1200A/μs	T_C=25℃	---	95.8	---	ns
			T_C=150℃	---	139	---	
I_{rr}	Diode Peak Reverse Recovery Current		T_C=25℃	---	20	---	A
			T_C=150℃	---	45	---	
Q_{rr}	Diode Reverse Recovery Charge		T_C=25℃	---	1.02	---	μC
			T_C=150℃	---	3.95	---	

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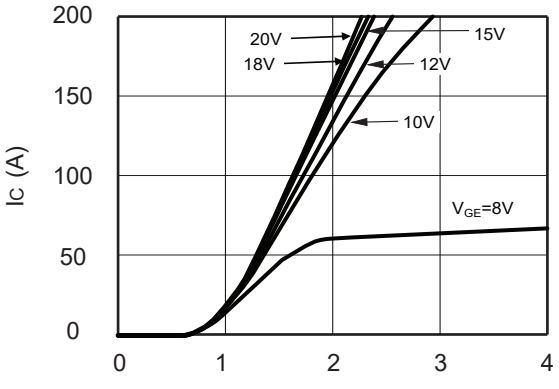
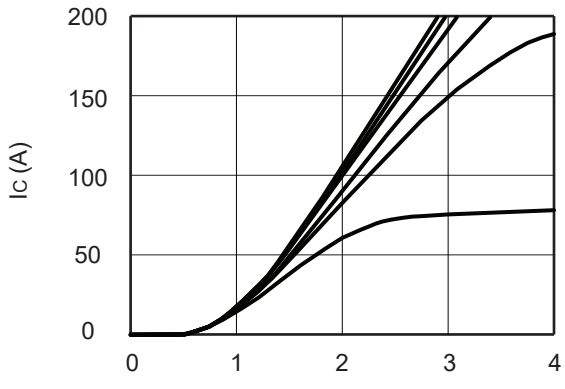
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

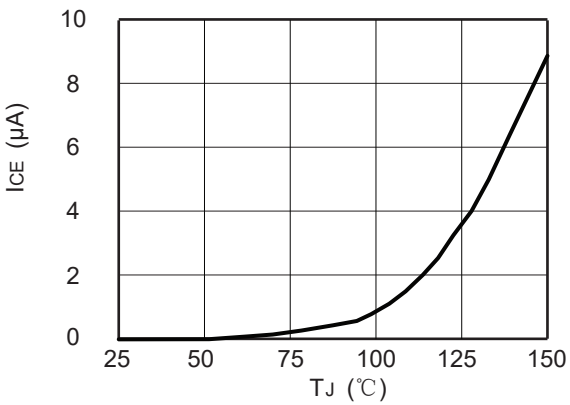
Typical electrical and thermal characteris



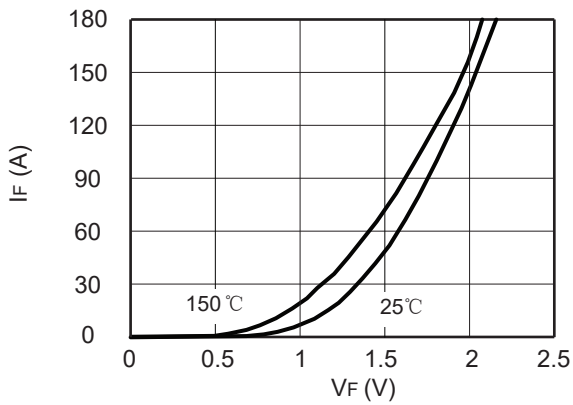
Output Characteristic (Tj=25℃)



Output Characteristic (Tj=150℃)

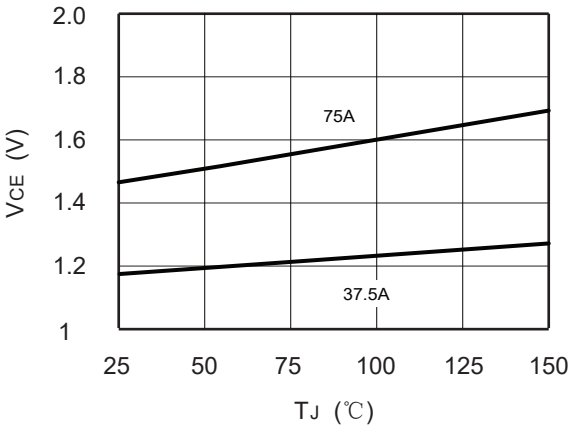


current as a function of junction temperature

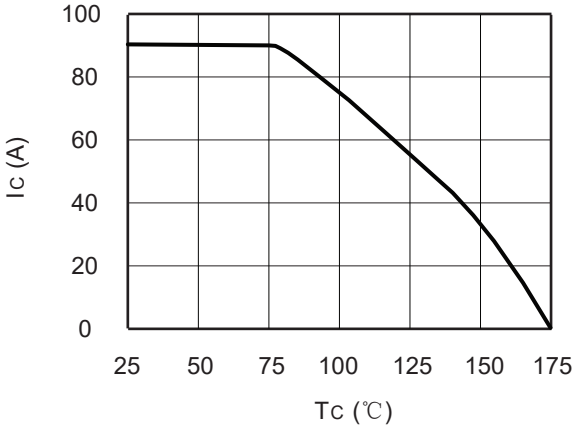


Diode Characteristic

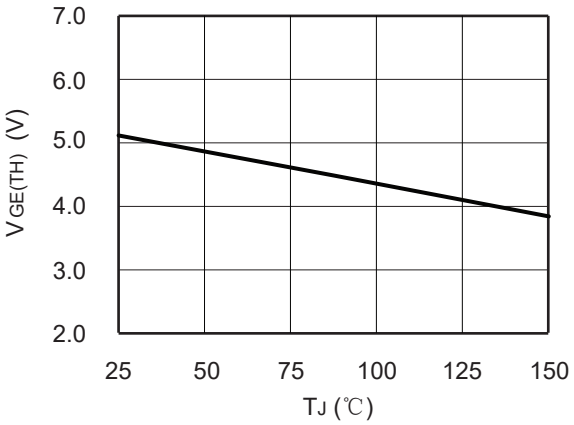
Typical electrical and thermal characteris



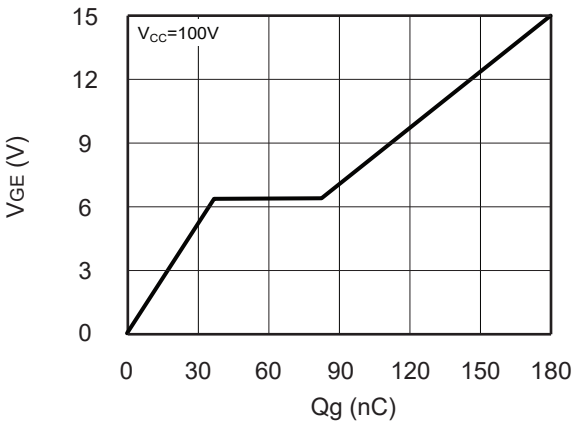
Collector-Emitter Saturation Voltage vs. Junction Temperature



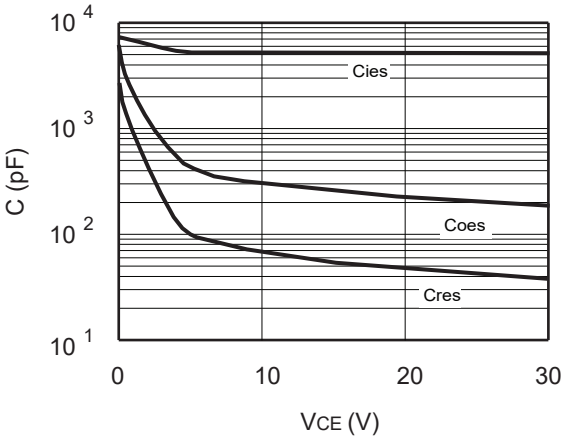
Collector current as a function of case temperature



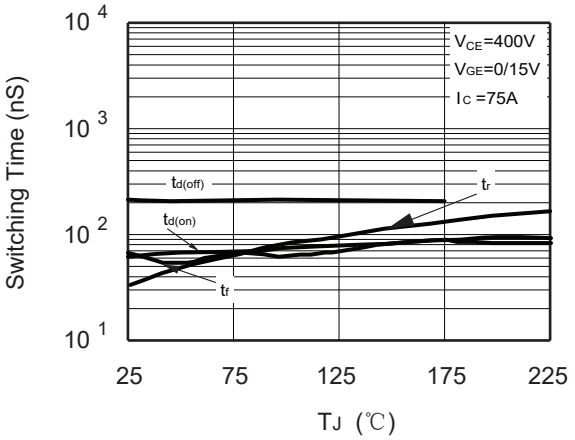
Gate threshold voltage vs Junction Temperature



Gate-Charge Characteristics



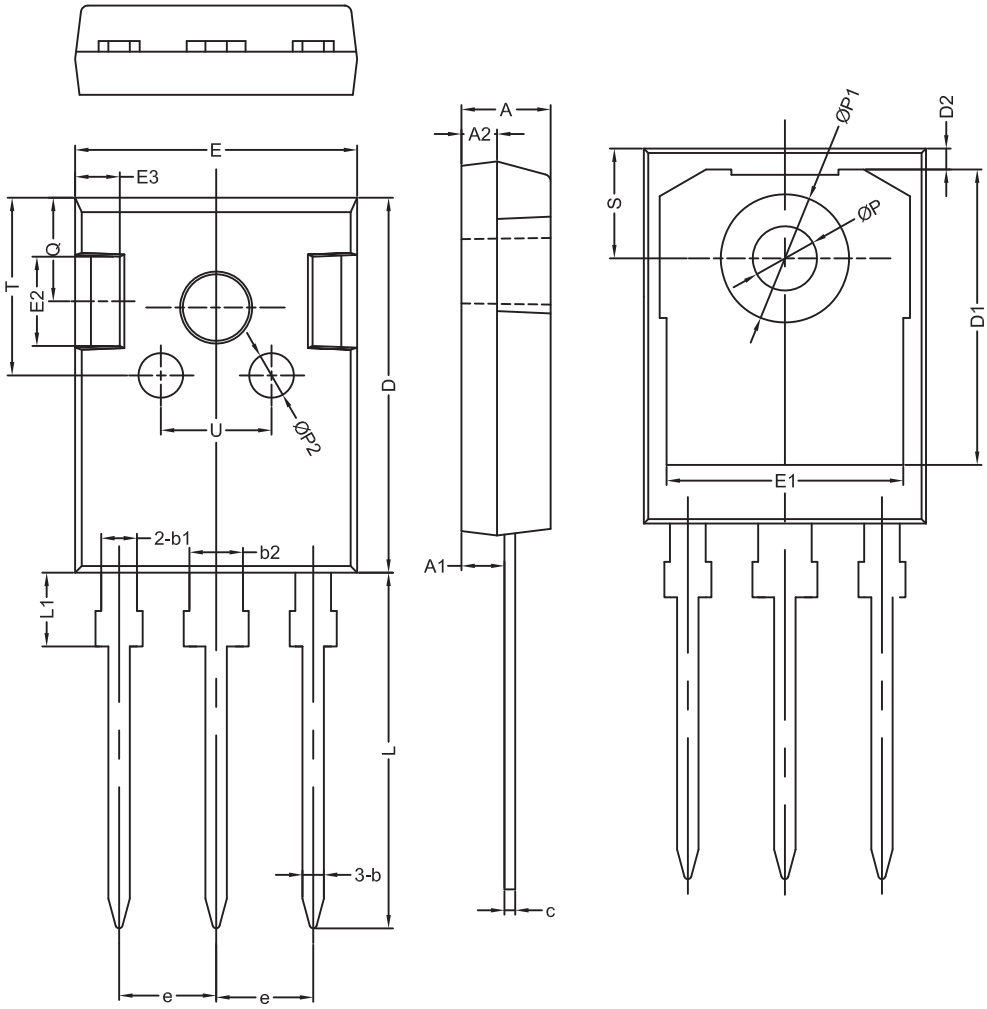
Capacitance Characteristic



switching times as afunction of junction temperature

Package Dimension

TO-247 Unit :mm



符号	机械尺寸/mm			符号	机械尺寸/mm		
	最小值	典型值	最大值		最小值	典型值	最大值
A	4.80	5.00	5.20	E2		5.00	
A1	2.21	2.41	2.61	E3		2.50	
A2	1.90	2.00	2.10	e		5.44	
b	1.10	1.20	1.35	L	19.42	19.92	20.42
b1		2.00		L1		4.13	
b2		3.00		P	3.50	3.60	3.70
c	0.55	0.60	0.75	P1		7.19	
D	20.80	21.00	21.20	P2		2.50	
D1		16.55		Q		5.80	
D2		1.20		S	6.05	6.15	6.25
E	15.60	15.80	16.0	T		10.00	
E1		13.30		U		6.20	