

Maximum ratings

Symbol	Parameter	Values	Unit
CES	Collector-emitter voltage	650	V
GES	Gate-emitter voltage	±20	V
C	Continuous collector current ($T_c=25^\circ\text{C}$)	12	A
	Continuous collector current ($T_c=100^\circ\text{C}$)	6	A
CM	Pulsed collector current, I_p limited by v_{jmax}	24	A
F	Diode continuous forward current ($T_c=100^\circ\text{C}$)	6	A
FM	Diode maximum current, I_p limited by v_{jmax}	24	A
sc	Short circuit withstand time	8	µs
tot	Power dissipation ($T_c=25^\circ\text{C}$)	125	W
	Power dissipation ($T_c=100^\circ\text{C}$)	63	W
vj	Operating junction temperature range	-40 to +175	
stg	Storage temperature range	-55 to +150	

Thermal characteristics

Symbol	Parameter	Values		Unit
		Typ.	Max.	
th(j-c)	Thermal resistance, junction to case for IGBT	-	1.2	K/ W
th(j-c)	Thermal resistance, junction to case for Diode	-	3.0	K/ W
th(j-a)	Thermal resistance, junction to ambient	-	90	K/ W



Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
V_{CES}	Collector-emitter breakdown voltage	$V_{GE}=0V, I_C=250\mu A$	650	-	-	V
I_{CES}	Collector-emitter leakage current	$V_{CE}=650V, V_{GE}=0V$	-	-	10	μA
	Gate leakage current, forward	$V_{GE}=20V, V_{CE}=0V$	-	-	100	μA
I_{GES}	Gate leakage current, reverse	$V_{GE}=-20V, V_{CE}=0V$	-	-	-100	μA
$V_{GE(th)}$	Gate-emitter threshold voltage	$V_{GE}=V_{CE}, I_C=1mA$	5.3	6.3		

Switching characteristics

Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
d(on)	Turn-on delay time	CC=400V GE=0/15V C=6A G=10 Inductive load	-	9	-	ns
r	Rise time		-	18	-	ns
d(off)	Turn-off delay time		-	24	-	ns
f	Fall time		-	91	-	ns
on	Turn-on energy		-	0.18	-	mJ
off	Turn-off energy		-	0.09	-	mJ
ts	Total switching energy		-	0.27	-	mJ
d(on)	Turn-on delay time	CC=400V GE=0/15V C=6A G=10 Inductive Load v _j =175	-	8	-	ns
r	Rise time		-	20	-	ns
d(off)	Turn-off delay time		-	33	-	ns
f	Fall time		-	118	-	ns
on	Turn-on energy		-	0.23	-	mJ
off	Turn-off energy		-	0.15	-	mJ
ts	Total switching energy		-	0.38	-	mJ



Symbol	Parameter	Test condition	Values			Unit
			Min.	Typ.	Max.	
F	Diode forward voltage	$I_F=6A$	-	1.4	-	V
		$I_F=6A, v_j=175$	-	1.2	-	V
t_r	Diode reverse recovery time		-	55	-	ns
I_{rrm}	Diode peak reverse recovery current	$V_R=400V$ $I_F=6A$ $d_F/d = -500A/\mu s$	-	10	-	A

Typical performance characteristics



Fig 1. Typical output characteristic ($v_j=25^\circ\text{C}$)



Fig 2. Typical output characteristic($v_j=175^\circ\text{C}$)

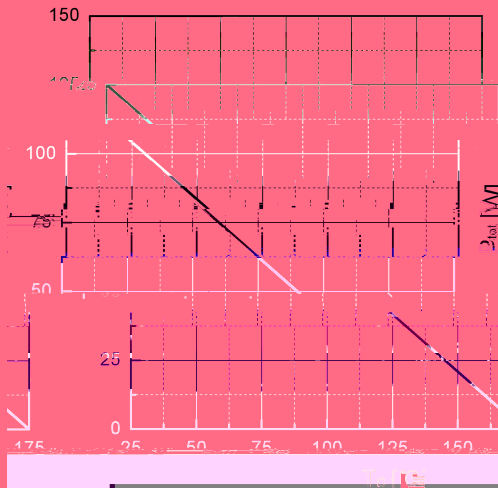


Fig 3. Power dissipation as a function of

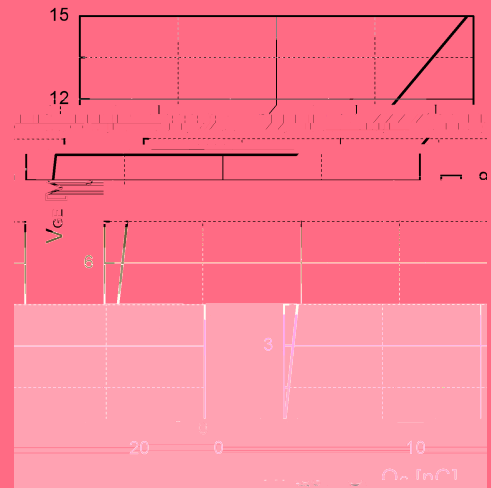


Fig 4. Typical Gate charge

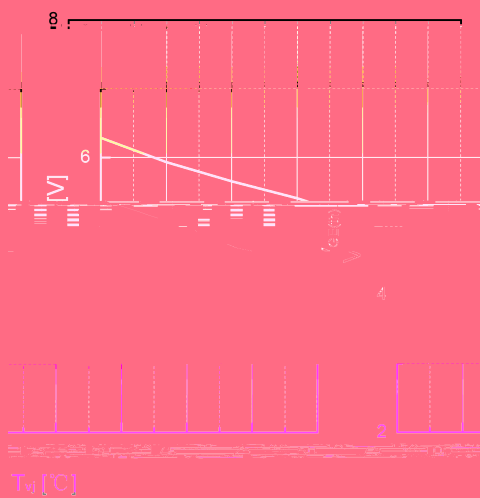


Fig 5. Typical $V_{ce(th)}$ as a function of v_j
($I_c=1\text{mA}$)

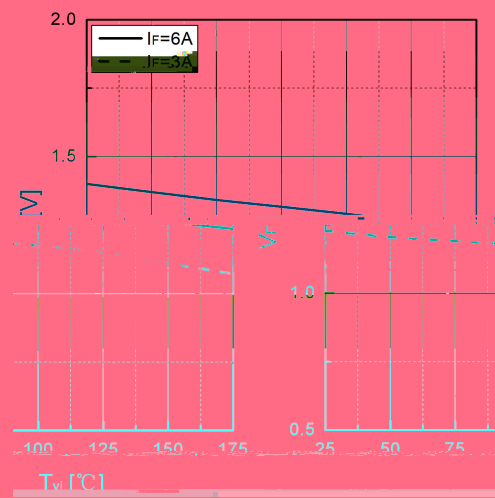


Fig 6. Typical $V_{ce(F)}$ as a function of v_j



Typical performance characteristics

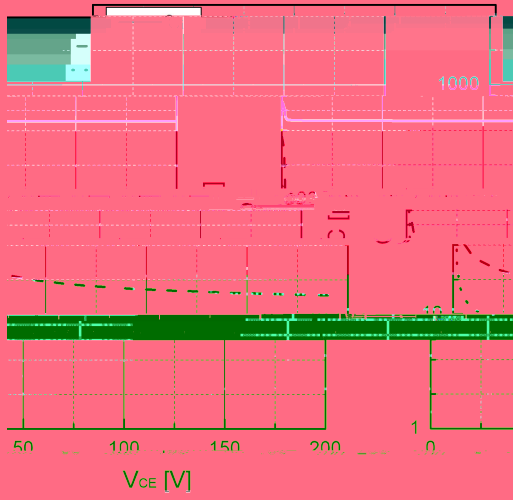
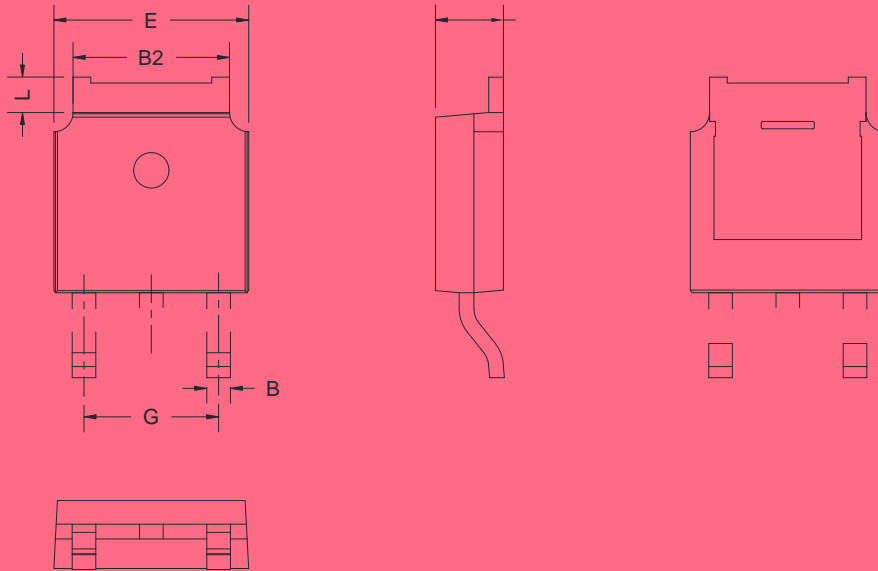
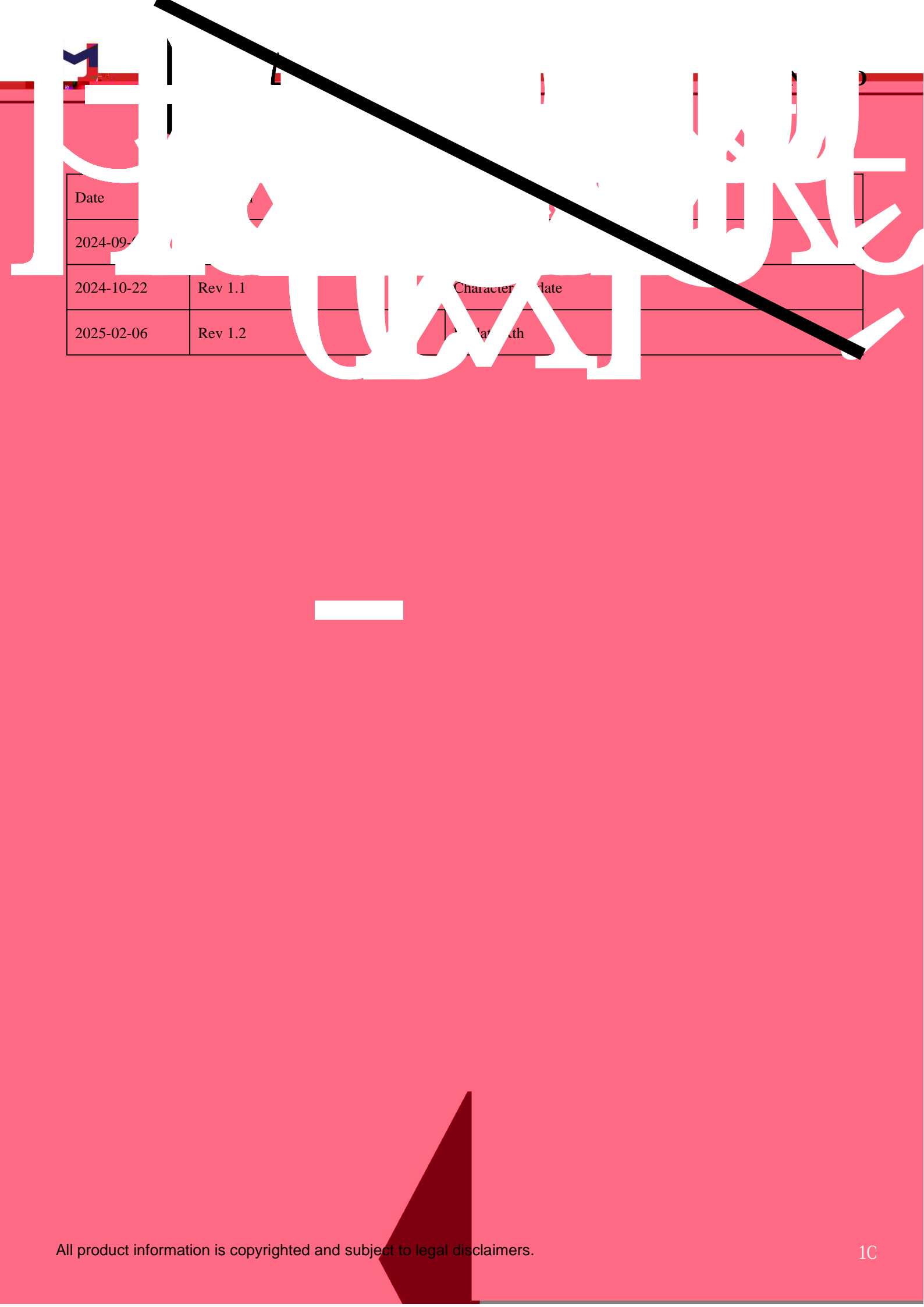


Fig 13. Typical capacitance as a function of V_{CE} (f=1MHz,





Date		
2024-09-11		
2024-10-22	Rev 1.1	Character date
2025-02-06	Rev 1.2	Date with