

**Key performance:**

- $V_{CE} = 650V$
- $I_C = 40A @ T_C = 100$
- $V_{CE(sat)} = 1.4V$

**Features:**

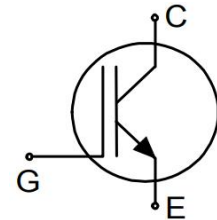
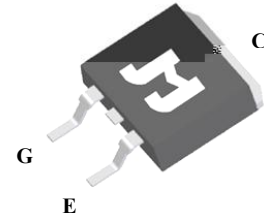
- Trench and field-stop technology.
- Excellent switching capability.

**Benefits:**

- High efficiency.
- High ruggedness.
- Ruggedness.

**Application:**

- EV charge

**TO-263**

**Package parameters**

Part Number	Manufacturer	Package	Package Method
JJT40N65LCN	T4065LCN	TO-263	Tab & Reel



Symbol	Parameter	Value	Unit
$V_{CES}$	Collector-emitter voltage	650	V
$V_{GES}$	Gate-emitter voltage	20	V
$I_C$	Collector current ( $T_C=25^\circ\text{C}$ )	80	A
	Collector current ( $T_C=100^\circ\text{C}$ )	40	A
$I_{CM}$	Peak collector current, limited by $T_a$	160	A
$I_F$	Diode forward current ( $T_C=100^\circ\text{C}$ )	40	A
$I_{FM}$	Diode average current, limited by $T_a$	160	A
$P$	Power dissipation ( $T_C=25^\circ\text{C}$ )	300	W
	Power dissipation ( $T_C=100^\circ\text{C}$ )	150	W
$T$	Operating temperature range	-40 +175	
$T_g$	Storage temperature range	-55 +150	



Static characteristics

Symbol	Parameter	Test condition	Value			Unit
			Min.	Typ.	Max.	
$BV_{CES}$	Circuit breakage voltage	$V_{GE}=0V, I_C=250\mu A$	650	-	-	V
$I_{CES}$	Circuit breakage current	$V_{CE}=650V, V_{GE}=0V$	-	-	50	$\mu A$
$I_{GES}$	Gate charge, forward	$V_{GE}=20V, V_{CE}=0V$	-	-	100	A
	Gate charge, reverse	$V_{GE}=-20V, V_{CE}=0V$	-	-	-100	A
$V_{GE(h)}$	Gate-emitter hold voltage	$V_{GE}=V_{CE}, I_C=1mA$	4.3	4.8	5.3	V
$V_{CE(a)}$	Circuit avalanche voltage	$V_{GE}=15V, I_C=40A$	-	1.4	-	V
		$V_{GE}=15V, I_C=40A, T=175$	-	1.7	-	V

Dynamic characteristics

Symbol	Parameter	Test condition	Value			Unit
			Min.	Typ.	Max.	
$C_e$	Input capacitance	$V_{CE}=30V$ $V_{GE}=0V$ $f=1MHz$	-	2540	-	F
$C_e$	Output capacitance		-	143	-	F
$C_e$	Reverse recovery capacitance		-	17	-	F
$Q_g$	Turn-on charge	$V_{CC}=520V$ $V_{GE}=15V$ $I_C=40A$	-	84	-	C



Switching characteristics

Symbol	Parameter	Test condition	Value			Unit
			Min.	Typ.	Max.	
$t_{d(on)}$	Turn-on delay time	$V_{CC}=400V$ $V_{GE}=0/15V$ $I_C=40A$ $R_G=10\Omega$ Inductive load	-	27	-	
$t_r$	Rise time		-	53	-	
$t_{d(off)}$	Turn-off delay time		-	139	-	
$t_f$	Fall time		-	121	-	
$E$	Turn-on energy		-	1.3	-	J
$E_{ff}$	Turn-off energy		-	1.3	-	J
$E$	Turn-on switching energy		-	2.6	-	J
$t_{d(on)}$	Turn-on delay time	$V_{CC}=400V$ $V_{GE}=0/15V$ $I_C=40A$ $R_G=10\Omega$ Inductive load $T_c=175$	-	26	-	
$t_r$	Rise time		-	54	-	
$t_{d(off)}$	Turn-off delay time		-	165	-	
$t_f$	Fall time		-	227	-	
$E$	Turn-on energy		-	1.4	-	J
$E_{ff}$	Turn-off energy		-	1.9	-	J
$E$	Turn-on switching energy		-	3.3	-	J

### Typical performance characteristics

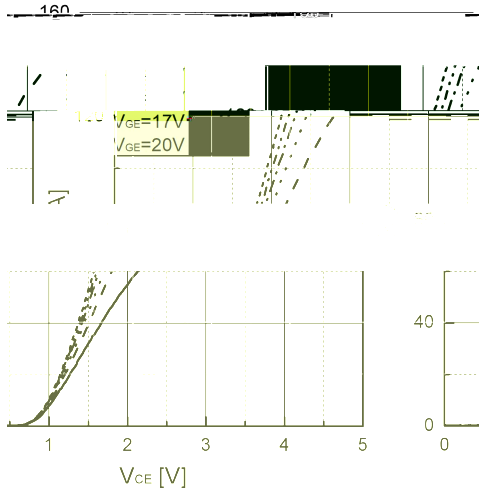


Fig 1. Typical characteristics of drain current vs. drain-source voltage ( $T_c = 25^\circ\text{C}$ )

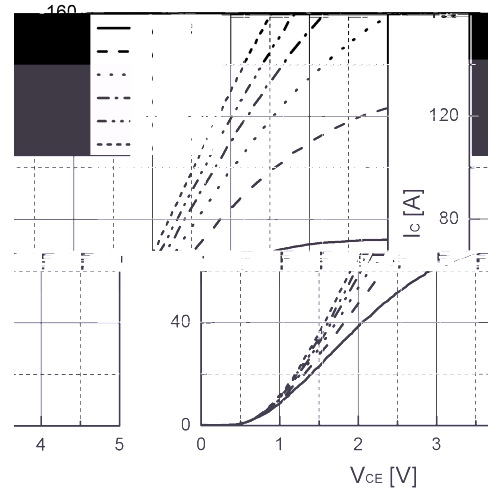


Fig 2. Typical characteristics of drain current vs. drain-source voltage ( $T_c = 175^\circ\text{C}$ )

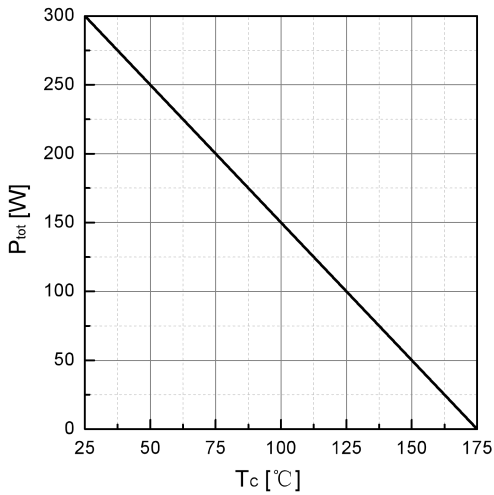


Fig 3. Power dissipation capability vs. case temperature  $T_c$

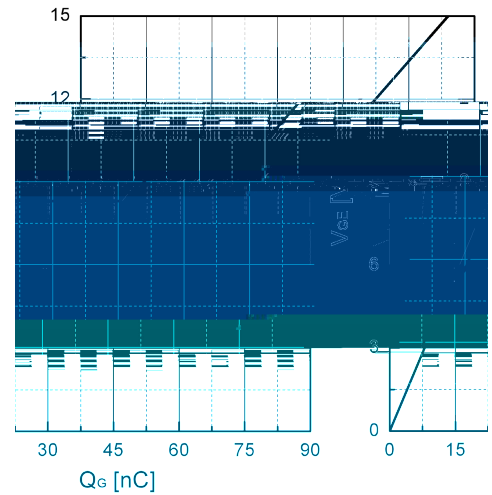


Fig 4. Typical gate charge characteristics

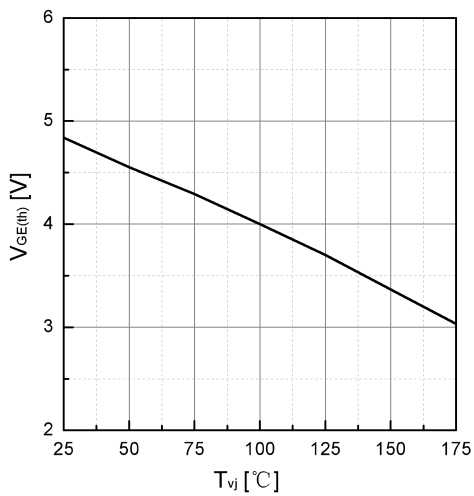


Fig 5. Typical gate-emitter voltage  $V_{GE(th)}$  vs. junction temperature  $T_{vj}$  ( $I_c = 1\text{ A}$ )

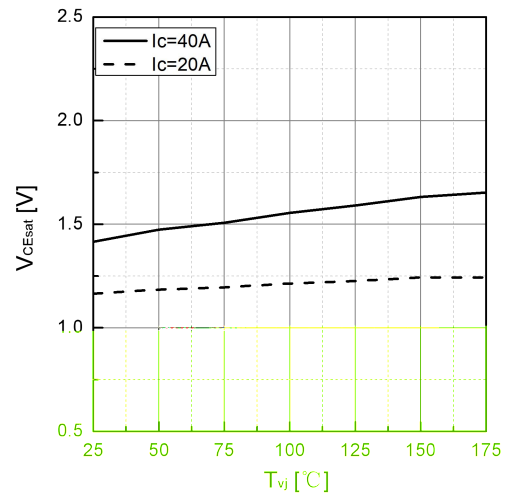


Fig 6. Typical  $V_{CEsat}$  vs. junction temperature  $T_{vj}$

Typical performance characteristics

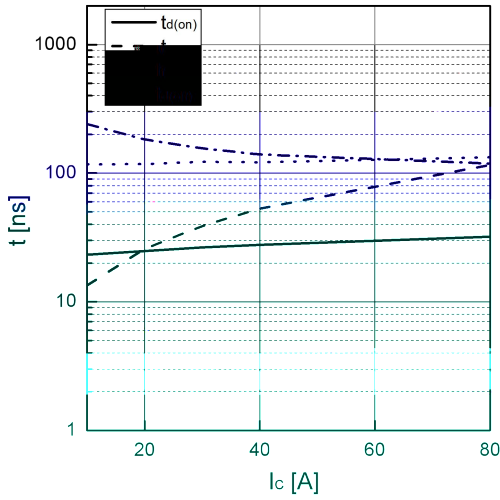


Fig 7. Typical delay time characteristics vs  $I_c$

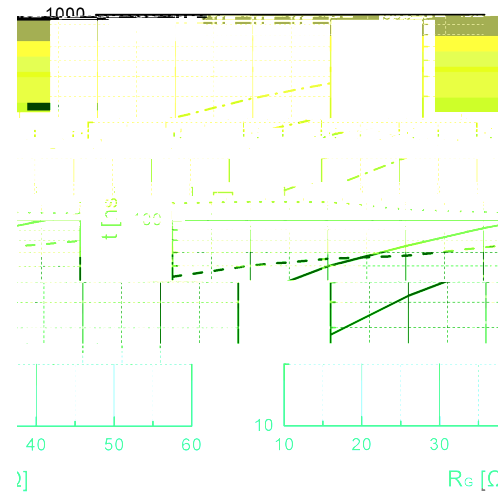


Fig 8. Typical delay time characteristics vs  $R_g$

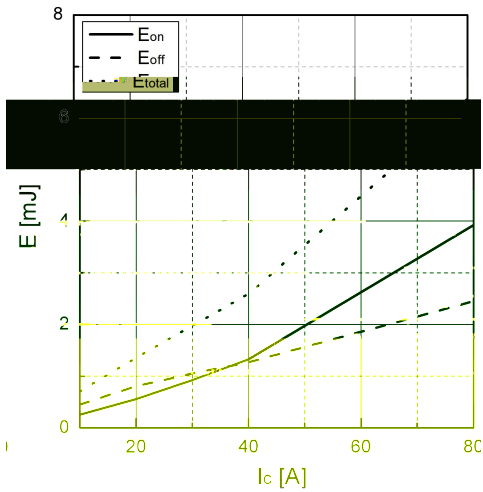


Fig 9. Typical energy characteristics vs  $I_c$

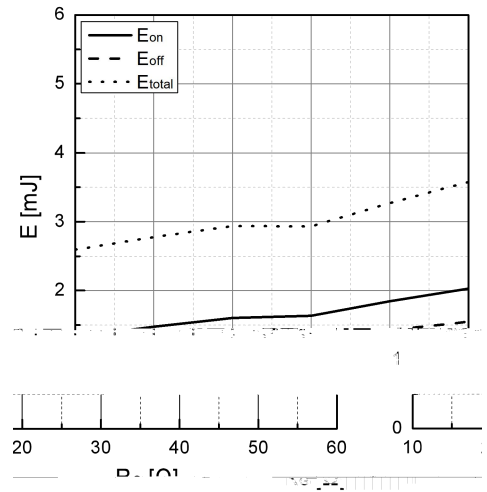


Fig 10. Typical energy characteristics vs  $R_g$

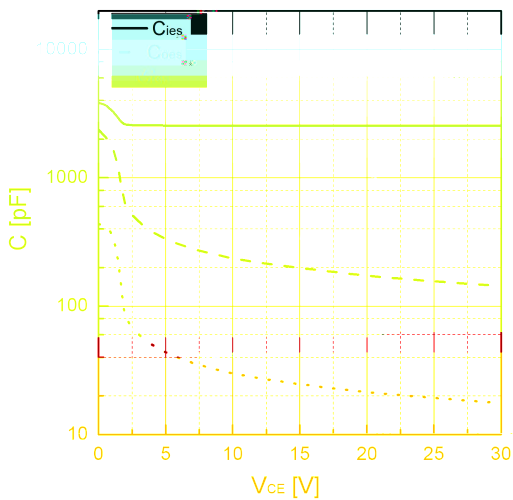
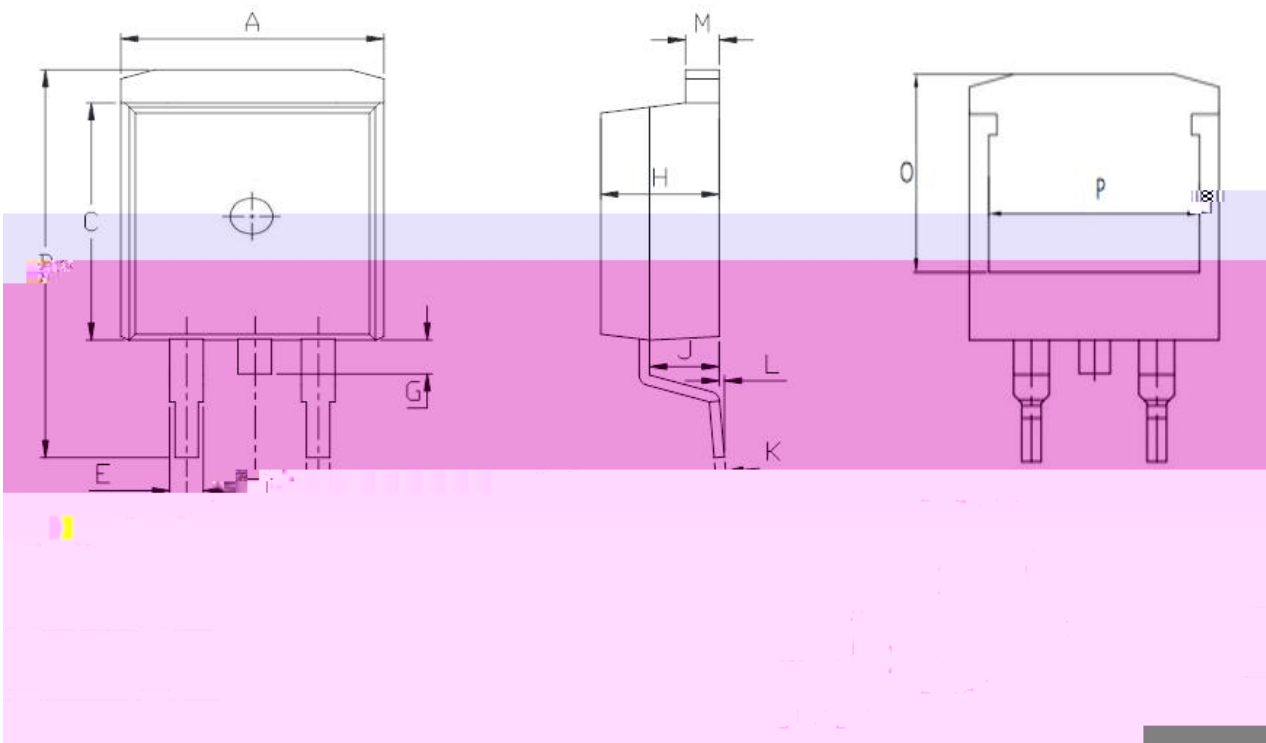


Fig 11. Typical capacitance characteristics vs  $V_{CE}$   
( $f=1\text{MHz}$ ,  $V_{GE}=0\text{V}$ )



Dimension

Ref.



Date	Revision	Change
2026-03-30	Rev 1.0	Initial