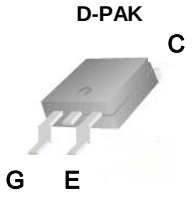
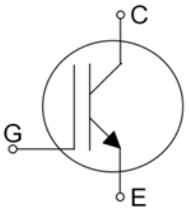
Features:

- 400V Trench Technology
- High Speed Switching
- Low Conduction Loss
- Positive Temperature Coefficient
- Easy parallel Operation
- RoHS compliant
- JEDEC Qualification





Applications :

Plasma Display Panel, Soft switching application,

Device	Package	Packaging type	Marking	Remark
TGD30N40P	D-PAK	Reel	TGD30N40P	RoHS

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Collector-Emitter Voltage		V_{CES}	400	V
Gate-Emitter Voltage		V_{GES}	±30	V
Continuous Current	T_C = 25 ℃	I_c	60	A
	T_C = 100 ℃		30	A
Pulsed Collector Current (Note 1)		I_{CM}	300	A
Power Dissipation	T_C = 25 ℃	P_D	56.8	W
	T_C = 100 ℃		22.7	W
Operating Junction Temperature		T_J	-55 ~ 150	℃
Storage Temperature Range		T_{STG}	-55 ~ 150	℃
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds		T_L	300	℃

Notes :

(1) Repetitive rating : Pulse width limited by max junction temperature, PW ≤ 10μs, duty cycle ≤ 1%.

Thermal Characteristics

Parameter	Symbol	Value	Unit
Maximum Thermal resistance, Junction-to-Case	$R_{\theta JC}$	2.2	℃/W
Maximum Thermal resistance, Junction-to-Ambient	$R_{\theta JA}$	110	℃/W

Electrical Characteristics of the IGBT T_C=25℃, unless otherwise noted

Parameter	Symbol	Test condition	Min	Typ	Max	Units
OFF						
Collector – Emitter Breakdown Voltage	BV_{CES}	V_{GE} = 0V, I_C = 1mA	400	--	--	V
Zero Gate Voltage Collector Current	I_{CES}	V_{CE} = 400V, V_{GE} = 0V	--	--	100	μA
Gate – Emitter Leakage Current	I_{GES}	V_{CE} = 0V, V_{GE} = ±30V	--	--	± 250	nA
ON						
Gate – Emitter Threshold Voltage	$V_{GE(TH)}$	V_{GE} = V_{CE}, I_C = 1mA	2	3.1	4.5	V
Collector – Emitter Saturation Voltage	$V_{CE(SAT)}$	V_{GE} = 15V, I_C = 30A, T_J = 25 °C	--	1.4	2.0	V
		V_{GE} = 15V, I_C = 30A, T_J = 125 °C	--	1.52	--	V
DYNAMIC						
Input Capacitance	C_{IES}	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz	--	845	--	pF
Output Capacitance	C_{OES}		--	50	--	pF
Reverse Transfer Capacitance	C_{RES}		--	23	--	pF
SWITCHING						
Turn-On Delay Time	$t_{d(on)}$	V_{CC} = 150V, I_C = 30A, R_G = 5Ω, V_{GE} = 15V, Resistive Load, T_J = 25 °C	--	13	--	ns
Rise Time	t_r		--	105	--	ns
Turn-Off Delay Time	$t_{d(off)}$		--	35	--	ns
Fall Time	t_f		--	160	--	ns
Turn-On Delay Time	$t_{d(on)}$	V_{CC} = 150V, I_C = 30A, R_G = 5Ω, V_{GE} = 15V, Resistive Load, T_J = 125 °C	--	14	--	ns
Rise Time	t_r		--	145	--	ns
Turn-Off Delay Time	$t_{d(off)}$		--	40	--	ns
Fall Time	t_f		--	240	--	ns
Total Gate Charge	Q_g	V_{CC} = 150V, I_C = 30A, V_{GE} = 15V	--	26	--	nC
Gate-Emitter Charge	Q_{ge}		--	3.1	--	nC
Gate-Collector Charge	Q_{gc}		--	9	--	nC

Fig. 1 Output characteristics

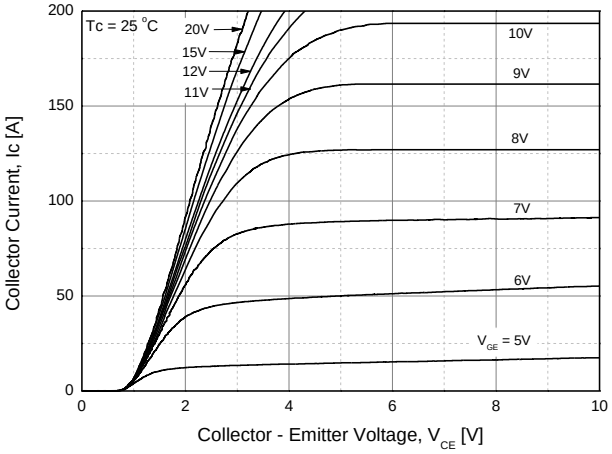


Fig. 2 Saturation voltage characteristics

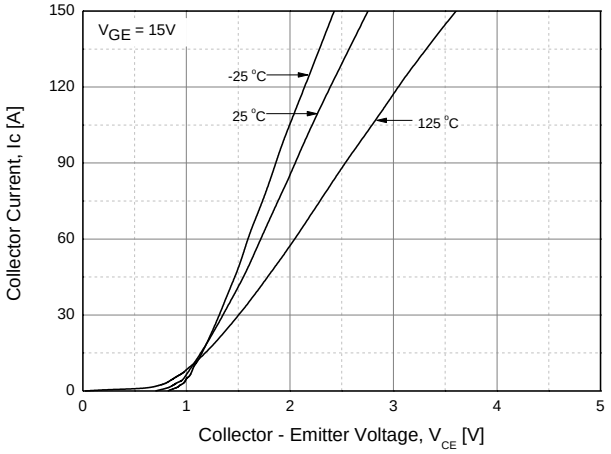


Fig. 3 Saturation voltage vs. collector current

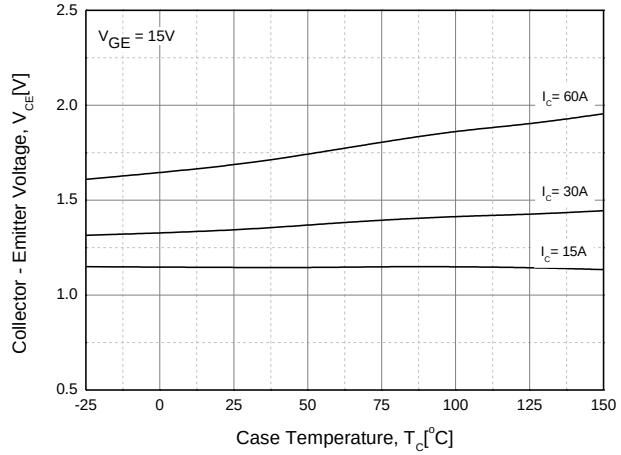


Fig. 4 Saturation voltage vs. gate bias

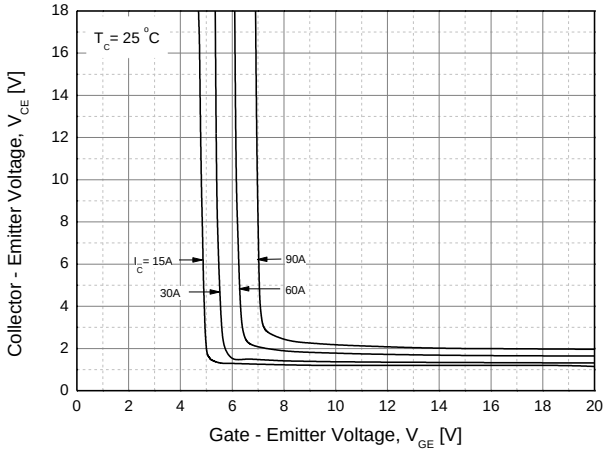


Fig. 5 Saturation voltage vs. gate bias

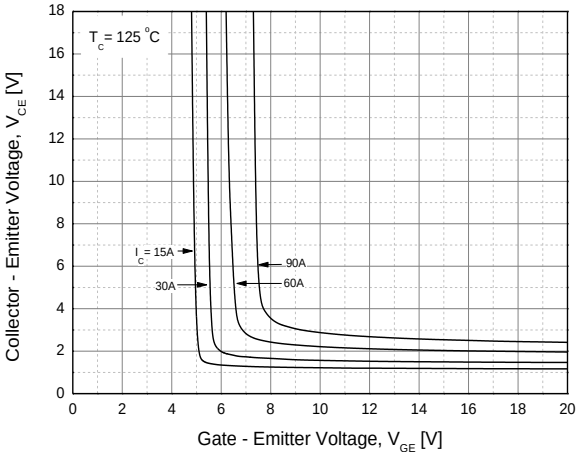


Fig. 6 Capacitance characteristics

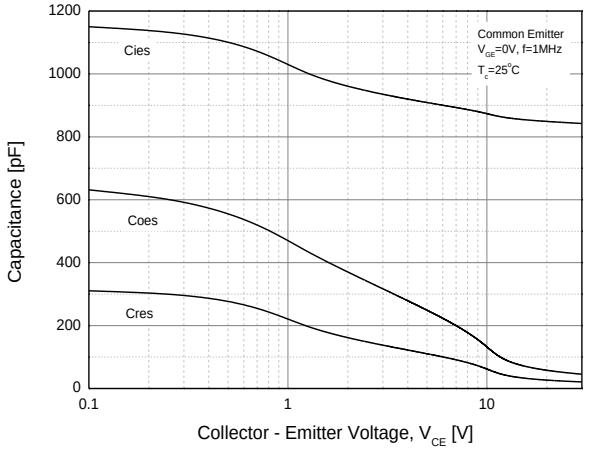


Fig. 7 Turn on time vs. gate resistance

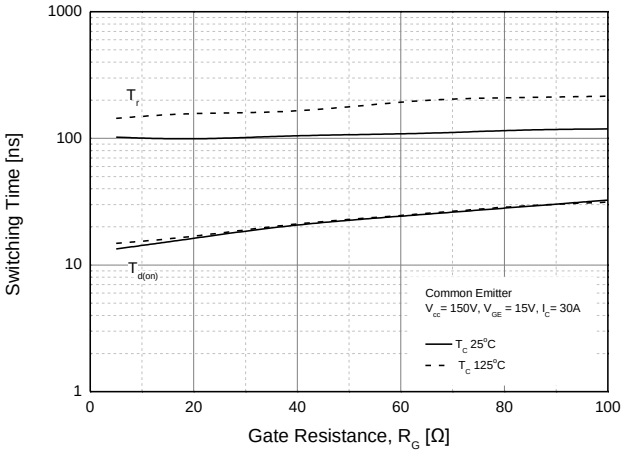


Fig. 8 Turn on time vs. collector current

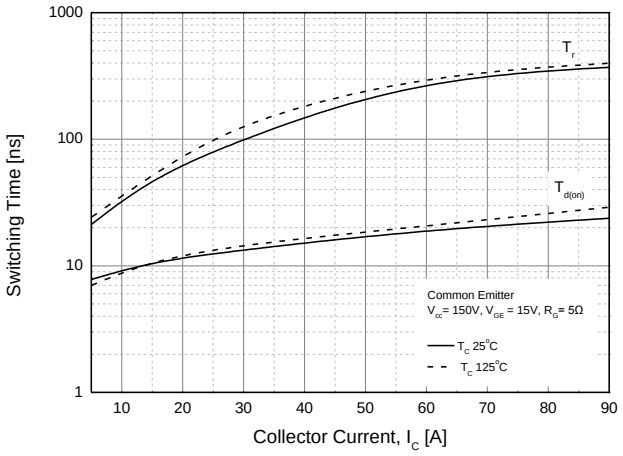


Fig. 9 Turn on time vs. Case temperature

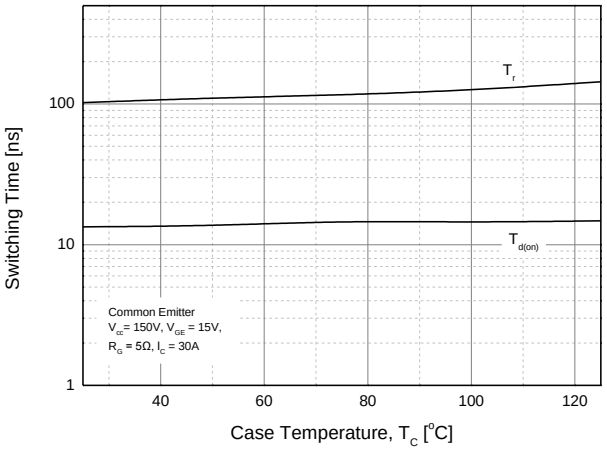


Fig. 10 Turn off time vs. gate resistance

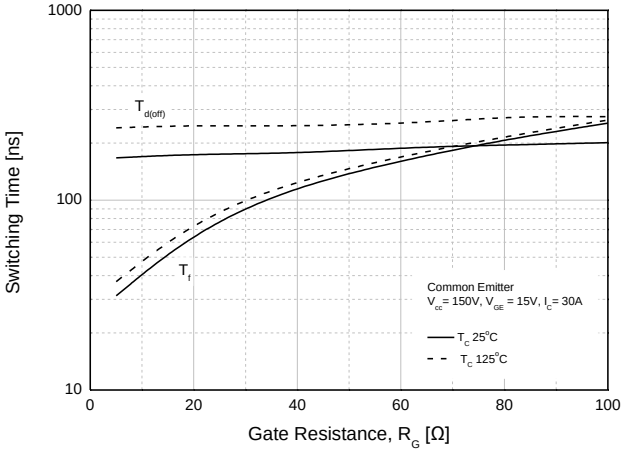


Fig. 11 Turn off time vs. collector current

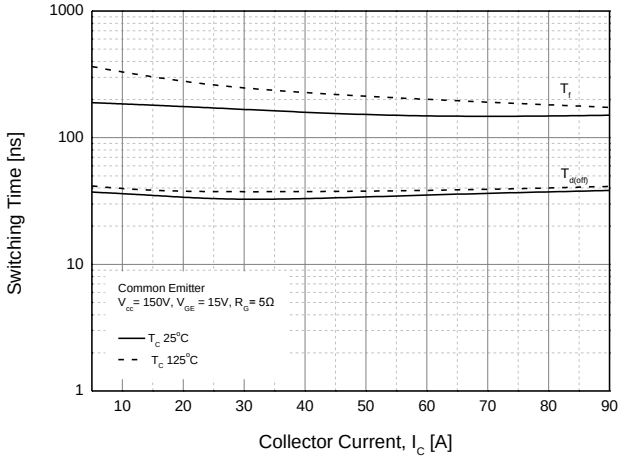


Fig. 12 Turn off time vs. Case temperature

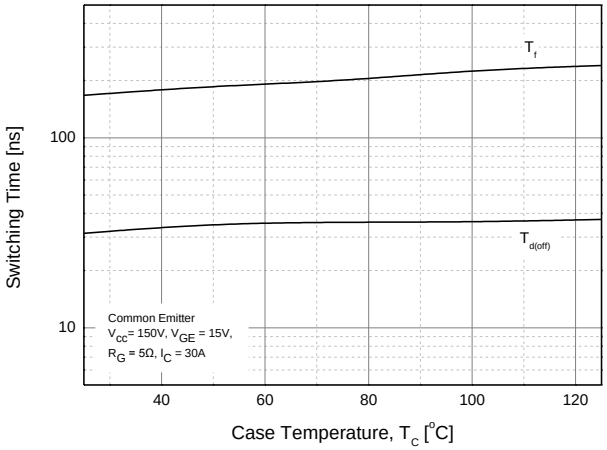


Fig. 13 Gate charge characteristics

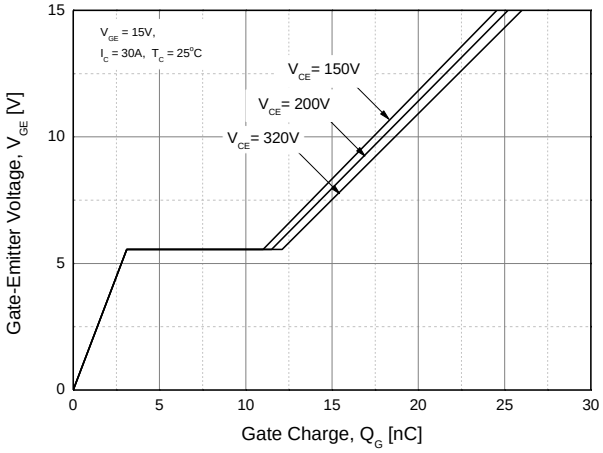


Fig. 14 SOA

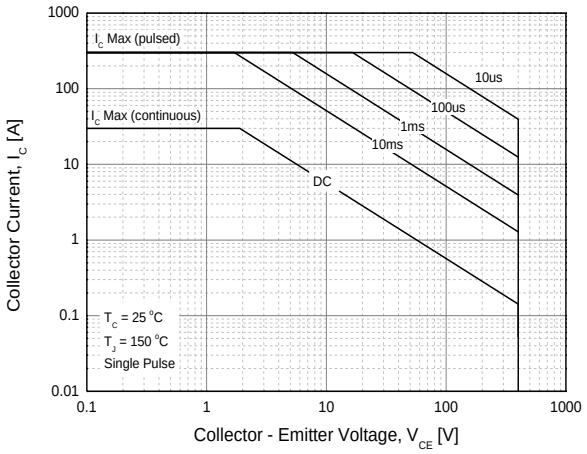


Fig. 15 RBSOA

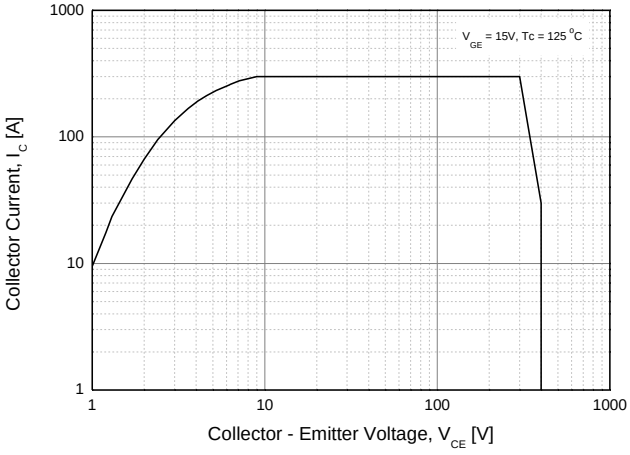
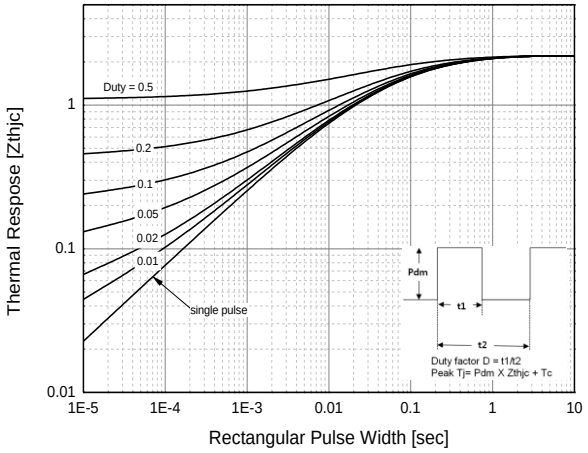
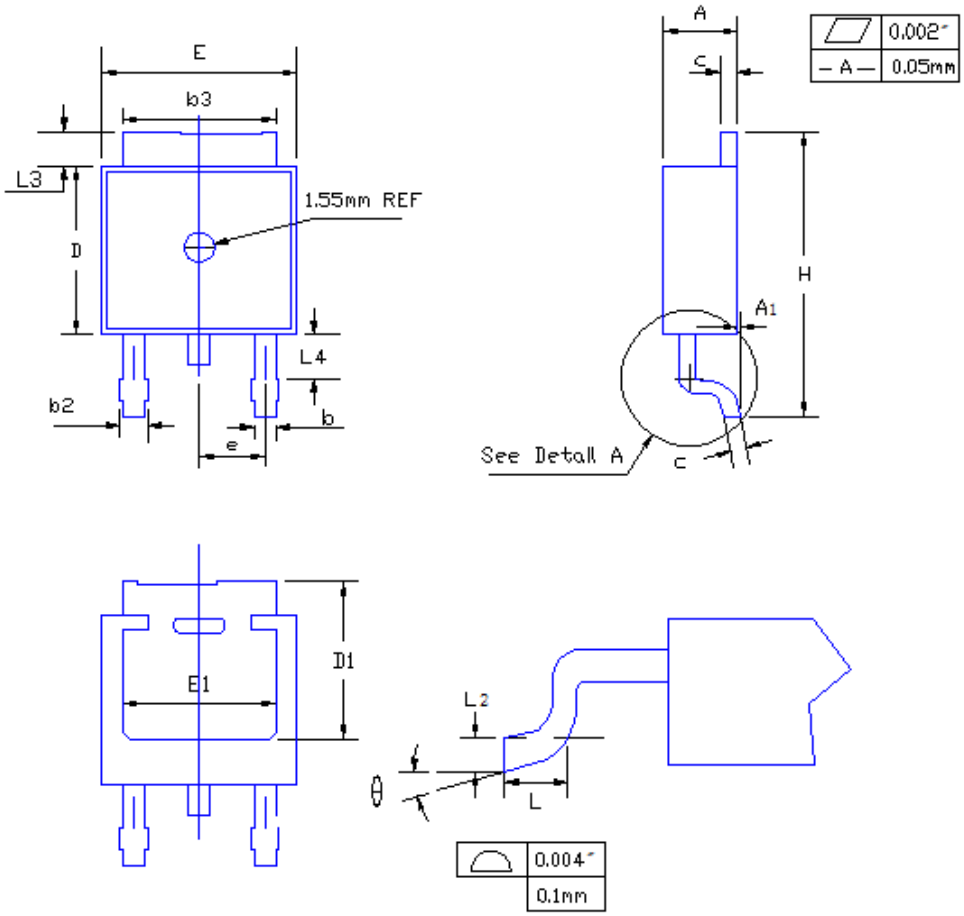


Fig. 16 Transient thermal impedance



TO-252 (D-PAK) MECHANICAL DATA



SYMBOL	MILLIMETERS	
	MIN	MAX
A	2.19	2.38
A1	–	0.13
b	0.64	0.89
b2	0.84	1.14
b3	5.21	5.46
c	0.46	0.61
D	5.97	6.22
D1	5.21	—
E	6.35	6.73
E1	4.83	—
e	2.29BSC	
H	9.65	10.41
L	1.40	1.78
L2	0.51BSC	
L3	0.89	1.27
L4	0.64	1.01
θ	0	8