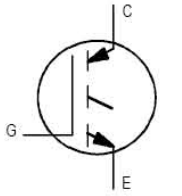
Features

- High short circuit rating optimized for motor control
- Low conduction losses
- High switching speed
- Tighter parameter distribution

V_{CES}=1200 V
$V_{CE(on)\ typ.}$ =3,1V
@V_{GE} =15V, Ic=45A



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Units	Max
Collector-to-Emitter Voltage	V_{CES}	V	1200
Continuous Collector Current	I_C @ Tc=25˚C	A	45
Continuous Collector Current	I_C @ Tc=100˚C		24
Pulsed Collector Current [1]	I_{CM}		90
Clamped Inductive Load Current [2]	I_{LM}		90
Short Circuit Withstand Time	tsc	μS	10
Maximum Power Dissipation	P_D @ Tc=25˚C	W	200
Maximum Power Dissipation	P_D @ Tc=100˚C		78
Gate–to-Emitter Voltage	V_{GE}	V	±20
Operating Junction and Storage temperature Range	T_J T_{STG}	ºC	-55 to +150
Soldering Temperature, for 10 seconds		ºC	300

THERMAL RESISTANCE

Parameter	Symbol	Units	Min	Typ.	Max
Junction-to-Case	$R_{ΘJC}$	˚C/W	-	-	0,64
Case-to-Sink, Flat, Greased Surface	$R_{ΘCS}$		-	0,24	-
Junction-to-Ambient, typical socket mount	$R_{ΘJA}$		-	-	40

ELECTRICAL CHARACTERISTICS (T_j =25 °C)

Parameter	Symbol	Units	Test Conditions	Min	Typ.	Max
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	V	V_{GE} = 0V, I_C = 250μA	1200	-	-
Emitter-to-Collector Breakdown Voltage	$V_{(BR)ECS}$	V	V_{GE} = 0V, I_C = 1A	18	-	-
Breakdown Voltage Temp.Coefficient	$\Delta V_{(BR)CES}/\Delta T_J$	V/˚C	V_{GE} = 0V, I_C = 2 mA	-	0,9	-
Collector-to-Emitter Saturation Voltage (see figure 2,5)	$V_{CE(ON)}$	V	V_{GE} = 15V, I_C = 24A	-	2,6	3,5
			V_{GE} = 15V, I_C = 45A	-	3,1	-
			V_{GE} = 15V, I_C = 24A T_J =150˚C	-	2,6	-
Gate Threshold Voltage	$V_{GE(th)}$	V	V_{GE}=V_{CE}, I_C =250 μA	3,0	-	6,0
Threshold Voltage Temp.Coefficient	$\Delta V_{(GE)th}/\Delta T_J$	mV/˚C	V_{GE}=V_{CE}, I_C =2mA	-	-10	-
Forward Transconductance	$g_{(fe)}$	S	V_{CE} = 100V, I_C = 24 A	13	19	-
Zero Gate Voltage Collector Current	I_{CES}	μA	V_{CE} = 1200V, V_{GE} =0V	-	-	250
			V_{CE} = 10V, V_{GE} =0V	-	-	2,0
			V_{CE} = 1200V, V_{GE} =0V T_J =150˚C	-	-	5000
Gate-to-Emitter Leakage Current	I_{GES}	nA	V_{GS} = ±20V			±100

SWITCHING CHARACTERISTICS (T_j =25 °C)

Parameter	Symbol	Units	Test Conditions	Min	Typ.	Max
Total Gate Charge (turn on)	Q_g	nC	V_{GE} = 15V,V_{CC} = 400V, I_C =40A See Figure 8	-	180	270
Gate-to-Emitter Charge (turn on)	Q_{ge}			-	25	38
Gate-to-Collector Charge (turn on)	Q_{gc}			-	70	110
Turn-On Delay Time	$t_{d(on)}$	ns	V_{CC} =960V, I_C =240A V_{GE} = 15V R_G=24 Ω	-	36	-
Rise Time	t_r			-	27	-
Turn-Off Delay Time	$t_{d(off)}$			-	200	300
Fall Time	t_f			-	130	190
Turn-On Switching Loss	E_{on}	mJ	Energy losses include «tail» See Figure 9,10,14	-	1,21	
Turn-Off Switching Loss	E_{off}			-	2,25	
Total Switching Loss	E_{tS}			-	3,46	4,1
Short Circuit Withstand Time	t_{SC}	μS	Vcc=720V, T_J=125˚C V_{GE}=15V R_G=5,0Ω	10	-	-
Turn-On Delay Time	$t_{d(on)}$	ns	T_J =150˚C V_{CC} =960V, I_C =24A V_{GE} = 15V R_G=24 Ω Energy losses include «tail» See Figure 10,11,14	-	35	-
Rise Time	t_r			-	29	-
Turn-Off Delay Time	$t_{d(off)}$			-	380	-
Fall Time	t_f			-	280	-
Total Switching Loss	E_{tS}	mJ		-	7,80	-
Input Capacitance	C_{ISS}	pF	V_{GE} = 0V,V_{CC} = 30V, f = 1.0MHz See Figure 7	-	2800	-
Output Capacitance	C_{OSS}			-	140	-
Reverse Transfer Capacitance	C_{RSS}			-	53	-

NOTES:

[1] Repetitive rating; V_{GE} =20V, pulse width limited by max junction temperature.(Fig.13b)

[2] V_{CC}=80%(V_{CES}), L= 10 μH, V_{GE} = 15V, R_G=5,0 Ω,(Fig.13a)

[3] Pulse width ≤80 μs, duty factor ≤0,1%.

[4] Pulse width 5,0μs single short.