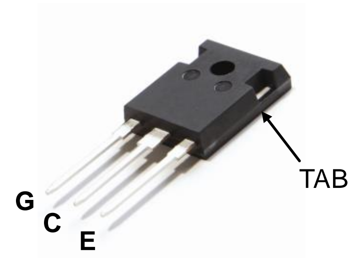
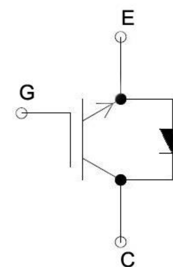
Name: AnR40IGB12D

Applications
- AC Inverter drives
- UPS
- Welding Power Supplies

Features
- Native Components
- Structure Trench
- Low $V_{CE(sat)}$
- High short circuit capability
- Easy paralleling
- Positive temperature coefficient of $V_{CE(sat)}$
- Low C_{ies}, C_{oes}, C_{res}
- 100% control of the effect of double current
- Insulated base plate for heat dissipation
- Self-restraint on the short-circuit currents





G	C	E	TAB
Gate	Collector	Emitter	Collector

Product Summary

Part Number	V_{CE}	$V_{CE(sat)}$	I_C	Packaging
AnR40IGB12D	1200 V	2.2 V	40 A	Tube

Table 1. Absolute Maximum Ratings

	Parameter	Value	Units
V_{CES}	Collector-to-Emitter Voltage	1200	V
V_{GES}	Gate-to-Emitter Voltage	±20	V
I_C, T_C=25 °C	Collector Current	60	A
I_{CM}, T_C=25 °C	Pulsed Collector Current	120	
I_C, T_C=100 °C	Collector Current	40	
I_{CM}, T_C=100 °C	Pulsed Collector Current	80	
P_{tot}	Power dissipation T_C=25 °C	175	W
T_j	Operating Temperature	–55 to +150	°C
T_{stg}	Storage Temperature	–55 to +125	
t_{SC}	Short circuit withstand time V_{GE}=15 V, V_{CC}≤1200 V, T_j=150 °C	10	µs
	Weight	9.6 (Typical)	g

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Table 2. Thermal resistance

Symbol	Parameter	Min	Max	Units	Test Conditions
R_{thJC}	Junction-to-Case	–	0.5	°C/W	
R_{thJA}	Junction-to-Ambient	–	40		

Table 3. Electrical Characteristics @ T_J=25°C

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$V_{CE(sat)}$	Collector-to-Emitter Saturation Voltage	–	1.9	2.2	V	V_{GE}=15 V, I_C=40 A
		–	2.2	2.5		V_{GE}=15 V, I_C=40 A, T_j=125 °C
$V_{GE(th)}$	Gate Threshold Voltage	4.0	5.0	7.0	V	V_{CE}=V_{GE}, I_C=1 mA
I_{CES}	Zero Gate Voltage Collector Current	–	0.01	0.1	mA	V_{CE}=1200 V, V_{GE}=0 V
		–	0.5	2.0		V_{CE}=1200 V, V_{GE}=0 V, T_j=125 °C
$I_{GES(F)}$	Gate-to-Emitter Leakage Forward	–	10	100	nA	V_{GE}=20 V
		–	20	150		V_{GE}=20 V, T_j=125 °C
$I_{GES(R)}$	Gate-to-Emitter Leakage Reverse	–100	–10	–		V_{GE}=–20 V
		–150	–20	–		V_{GE}=–20 V, T_j=125 °C
C_{ies}	Input Capacitance	–	tbd	–	pF	V_{GE}=0 V, V_{CE}=25 V, f=1 MHz
C_{oes}	Output Capacitance	–	tbd	–		
C_{res}	Reverse Transfer Capacitance	–	tbd	–		
$t_{d(On)}$	Turn-On Delay Time	–	tbd	–	ns	V_{CC}=600 V, I_C=40 A, V_{GE}=±15 V, R_G=10 Ω, T_j=25 °C, Inductive Load
t_r	Rise Time	–	tbd	–		
$t_{d(Off)}$	Turn-Off Delay Time	–	tbd	–		
t_f	Fall Time	–	tbd	–		
E_{on}	Turn-On Energy	–	tbd	–	mJ	V_{CC}=600 V, I_C=40 A, V_{GE}=±15 V, R_G=10 Ω, T_j=25 °C, Inductive Load
E_{off}	Turn-Off Energy	–	tbd	–		

Table 4. Anti-Parallel Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V_F	Forward Voltage	–	2.5	3.0	V	I_F=40 A, V_{GE}=0 V
I_{rrm}	Maximum Reverse Recovery Current	–	26	–	A	I_F=40 A, di_F/dt=0.4 A/ns, V_{GE}=0 V, T_j=25 °C
t_{rr}	Diode Reverse Recovery Time	–	170	300	ns	
Q_{rr}	Diode Reverse Recovery Charge	–	2.2	–	µC	

Precious metal content into 1000 pieces:

Gold _____________ g;

Silver _____________ g.

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Case Outline and Dimensions - TO-247

NOTE:
1 Dimensions are shown in millimeters.

PAD ASSIGNMENTS
1 = GATE
2 = COLLECTOR
3 = EMITTER

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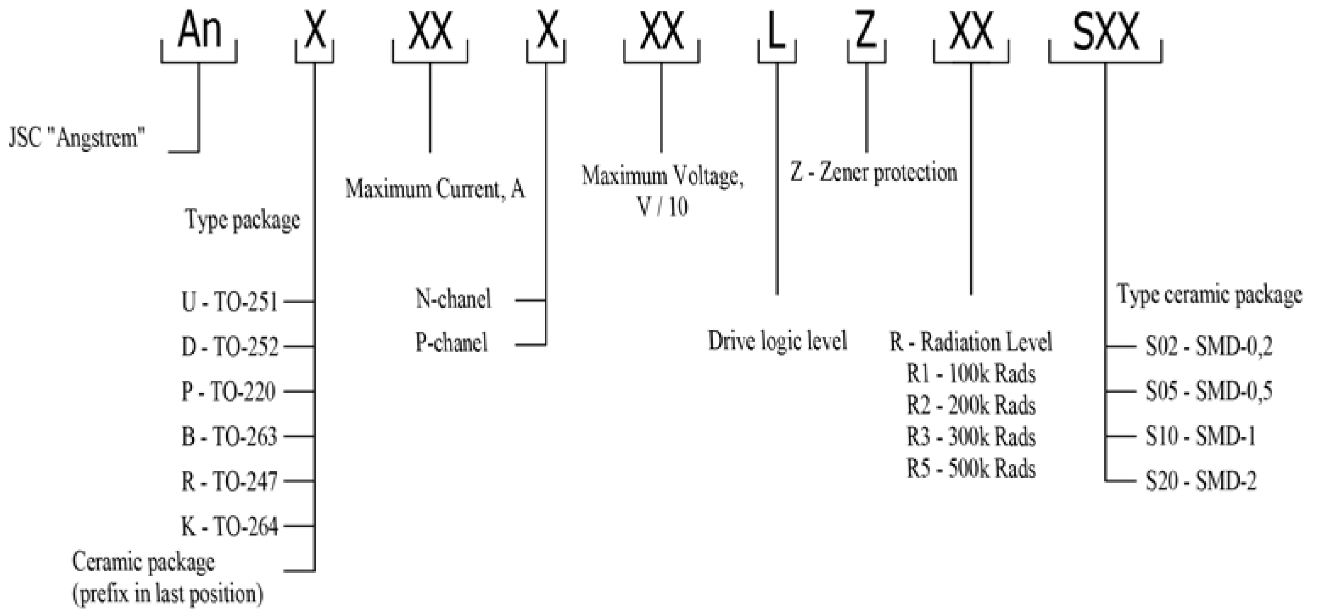
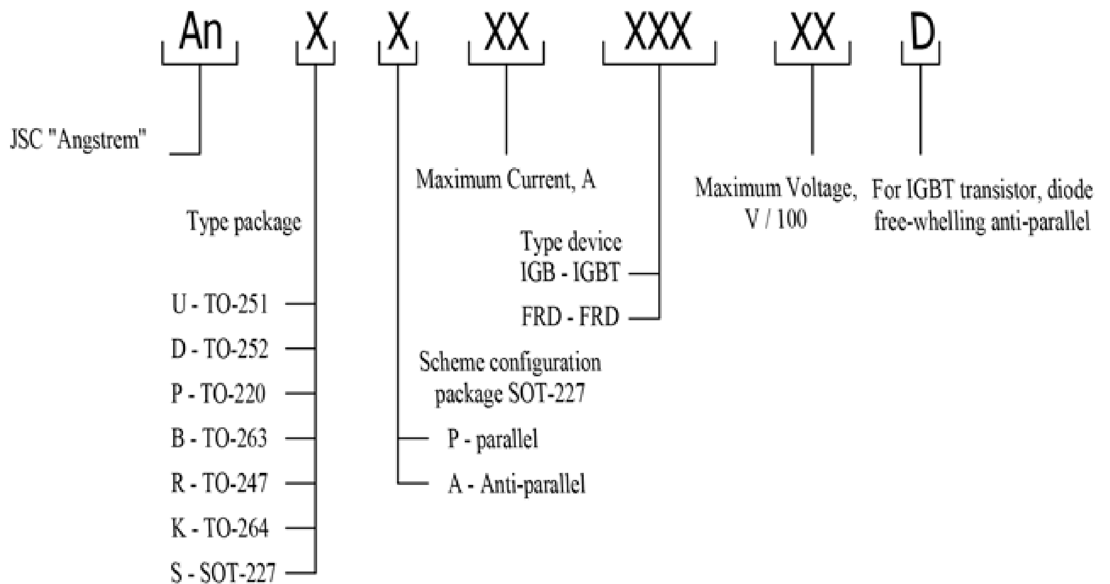
Description name MOSFET



Description name IGBT & FRD



Sample:

	AnB7N60	- MOSFET N-chanel, 7A, 600V, package TO-263
	An10N70R1S10	- MOSFET N-chanel, 10A, 700V, Radiation level 100k Rads, package SMD-1
	AnR75IGB12	- IGBT, 75A, 1200V, package TO-247
	An50FRD17	- FRD, 50A, 1700V, chip
	AnSP100FRD04	- FRD, 200A, 400V package SOT-227 configuration two diode parallel

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