

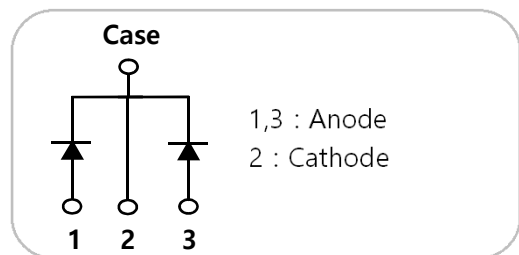

**General description**

Symbol	Value
$V_{BR}$ @ $T_C=25^\circ\text{C}$	Min 650V
$I_F$ @ $T_C=150^\circ\text{C}$	40A
$Q_C$	Typ 130nC


**Package**


**Features**

- Low forward voltage
- 175°C maximum operating temperature
- Negligible reverse recovery current.
- Fast switching speed



**Applications**

- General purpose
- Switching mode power supply
- Boot diodes in PFC at DC/DC
- Industrial motor drives
- Motor drivers
- Solar inverters


**Maximum Ratings ( $T_C = 25^\circ\text{C}$ )**

Parameter	Symbol	Test condition	Value	Unit
Repetitive peak reverse voltage	$V_{RRM}$	-	650	V
DC peak reverse voltage	$V_R$	-	650	V
Continuous forward current	$I_F$	$T_C=150^\circ\text{C}$	20*/40	A
Non-repetitive forward surge current	$I_{FSM}$	$t_p=10$ ms, Half sine pulse	150	A
Power dissipation	$P_{tot}$	$T_C=25^\circ\text{C}$	215*	W
Operating and storage temperature range	$T_{J}, T_{stg}$	-	-55 to 175	$^\circ\text{C}$

\* Per leg / Total device



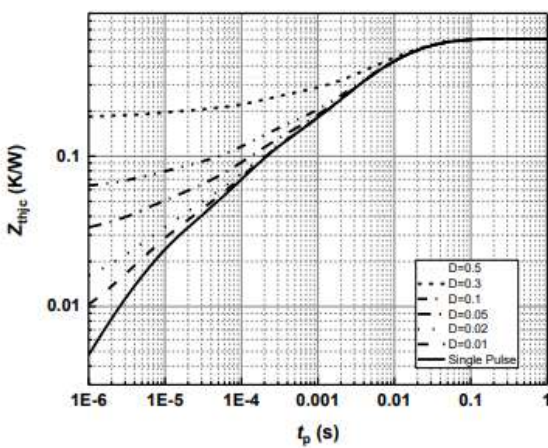
**Electrical characteristics (T<sub>C</sub> = 25°C)**

Parameter	Symbol	Test condition	Value			Unit
			Min	Typ	Max	
Forward voltage	V <sub>F</sub>	I <sub>F</sub> =20A, T <sub>C</sub> =25°C	-	1.43	-	V
		I <sub>F</sub> =20A, T <sub>C</sub> =175°C	-	1.75	-	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> =650V, T <sub>C</sub> =25°C	-	10/20	200/400	uA
		V <sub>R</sub> =650V, T <sub>C</sub> =175°C	-	20/40	-	uA
Total capacitive charge	Q <sub>C</sub>	V <sub>R</sub> =400V, Q <sub>C</sub> = ∫ C(V)dV	-	65/130	-	nC
Total capacitance	C	V <sub>R</sub> =1V, f=1MHz	-	1000/2000	-	pF
		V <sub>R</sub> =600V, f=1MHz	-	110/220	-	pF

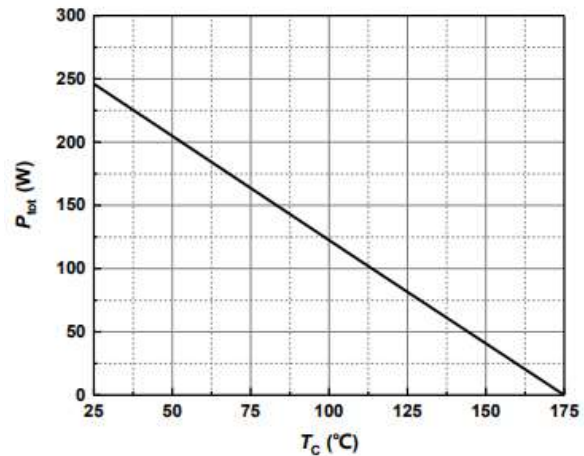
**Thermal characteristics(T<sub>C</sub> = 25°C)**

Symbol	Parameter	Typ	Unit
R <sub>th(j-c)</sub>	Junction to case	0.61*	°C/W

t<sub>p</sub> – Z<sub>thjc</sub> Characteristics

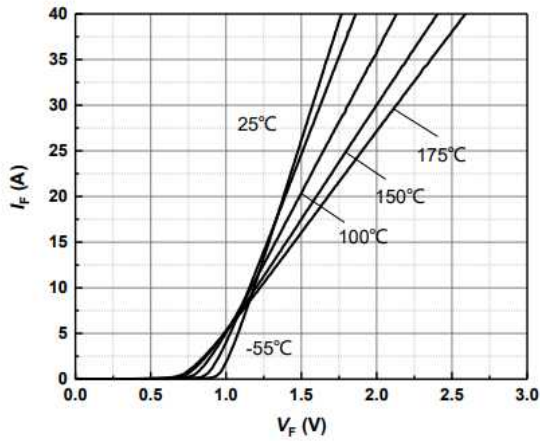


T<sub>C</sub> – P<sub>tot</sub> Characteristics

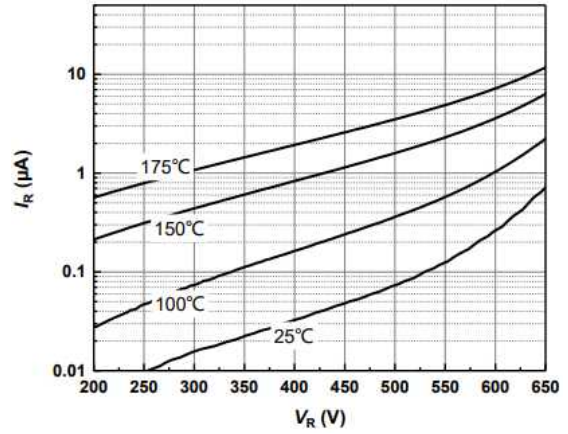


Typical electrical characteristics curves (Per leg,  $T_C = 25^\circ\text{C}$ )

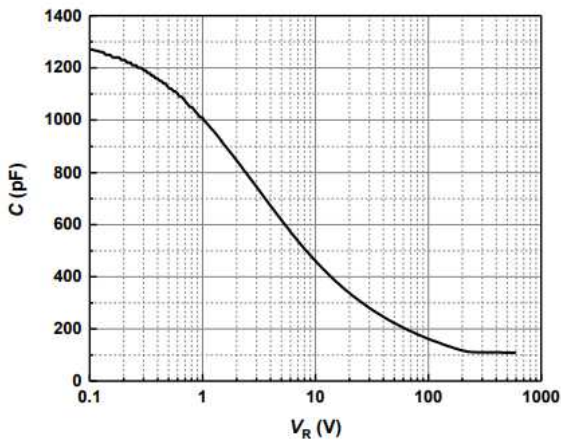
$V_F - I_F$  Characteristics



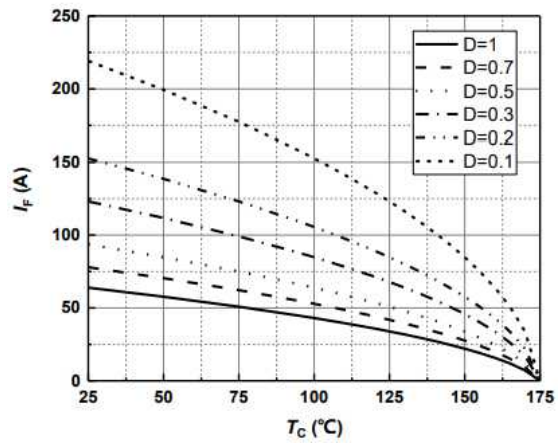
$V_R - I_R$  Characteristics



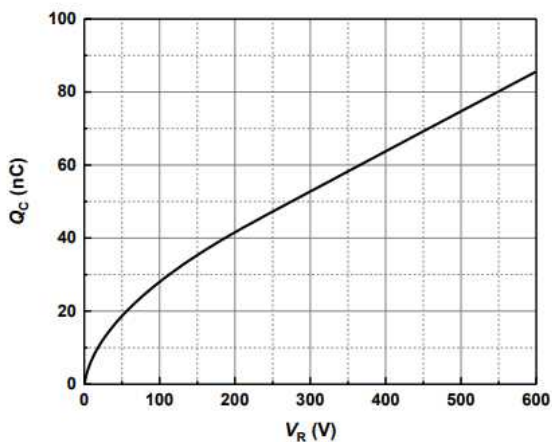
$V_R - C_T$  Characteristics



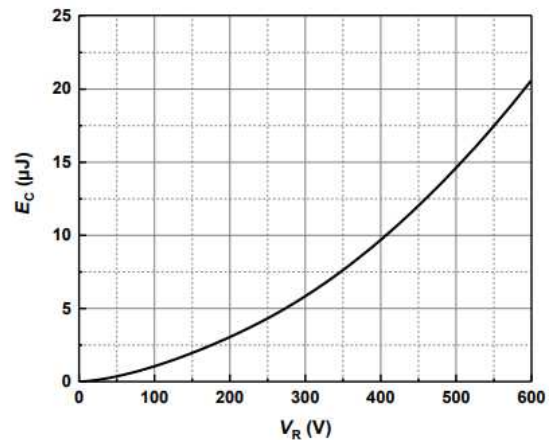
$T_C - I_F$  Characteristics



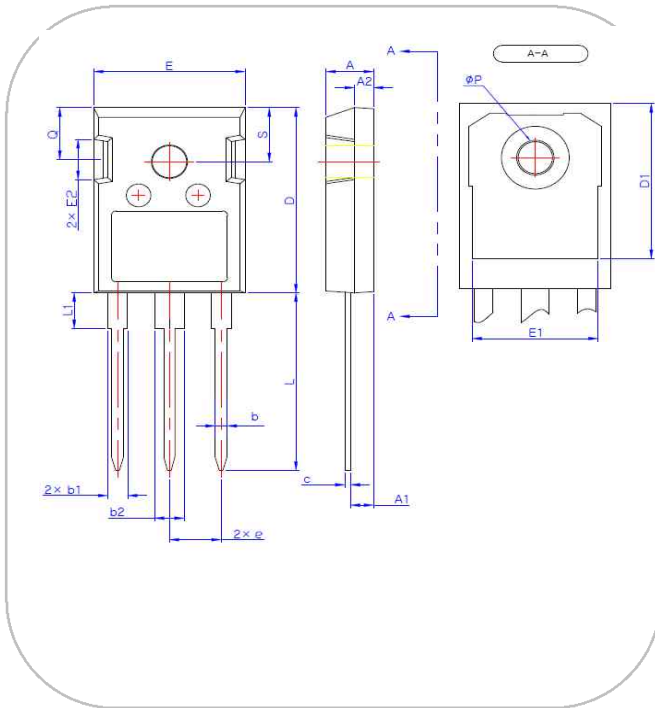
$V_R - Q_C$  Characteristics



$V_R - E_C$  Characteristics

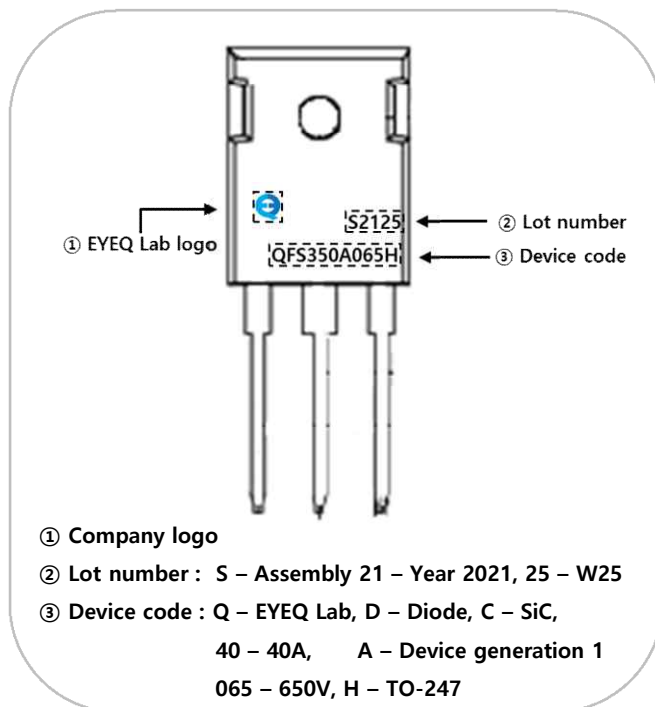


**Package dimensions(TO-247)**



Symbol	Min	Nom	Max
A	4.80	5.00	5.20
A1	2.29	2.36	2.54
A2	1.90	2.00	2.10
b	1.10	1.20	1.30
b1	1.91	2.11	2.20
b2	2.92	3.10	3.20
c	0.50	0.60	0.70
D	20.80	21.07	21.34
D1	17.43	17.63	17.83
E	15.75	15.94	16.13
E1	13.06	13.26	13.46
E2	4.32	4.58	4.83
e	5.45 BSC		
L	19.85	20.00	20.25
L1	-	-	4.49
$\Phi P$	3.55	3.60	3.65
Q	5.59	5.89	6.19
S	6.15 BSC		

**Marking information**



- ① Company logo
- ② Lot number : S – Assembly 21 – Year 2021, 25 – W25
- ③ Device code : Q – EYE Q Lab, D – Diode, C – SiC,  
40 – 40A, A – Device generation 1  
065 – 650V, H – TO-247

