

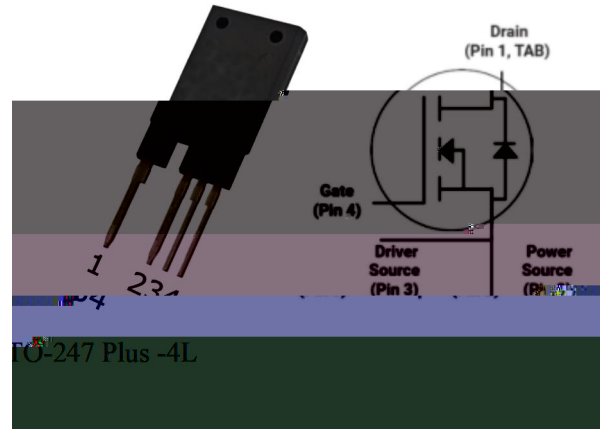
# U4O246452R3L



VtkSUK<sup>VO</sup> 4522X Uknkeqp Ectdkfg Rqygt OQUHGV I4 N Channel Enhancement

## Hgcvtgu

- High speed switching
- Very low switching losses
- Fully controllable dv/dt
- High blocking voltage with low on-resistance
- Fast intrinsic diode with low reverse recovery (Qrr)
- Temperature independent turn-off switching losses
- Halogen free, RoHS compliant



## Dgpghkvu

- Cooling effort reduction
- Efficiency improvement
- Reduced cooling requirements
- Increased power density
- Increased system switching frequency



## Crnkcvkqpu

- On-board charger/PFC
- EV battery chargers
- Booster/DC-DC converter
- Switch mode power supplies

Vcdng 3 Mg{ r gthqt o cpeg cpf rcemcig rctc ogvgtu

V{rg	X <sub>FU</sub>	K <sub>FU</sub> (T <sub>C</sub> = 25 °C, R <sub>th(j-c),max</sub> )	T <sub>FU</sub> *qp+. v{r (V <sub>GS</sub> = 18V, I <sub>D</sub> = 60A, T <sub>J</sub> = 25 °C)	V <sub>L.ocz</sub>	Octmkpi	Rcemcig
S2M024230P1J	2300V	90A	24m	175	S2M024230P1J	TO-247 Plus -4L



### 3 Oczk owo tcvkpiu

Vcdng 4 Oczk owo tcvkpi (T<sub>c</sub> = 25°C unless otherwise specified)

U{ odqn	Rctc o gygt	Xcnwg	Wpkv	Vguv Eqpfkvkqpu	Pqvg
V <sub>DS,max</sub>	Drain source voltage	2300	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 100μA	
V <sub>GS,max</sub>	Gate source voltage	-8 /+22	V	Absolute maximum values	Note 1
V <sub>GSop</sub>	Gate source voltage	-4 /+18	V	Recommended operational values	
I <sub>D</sub>	Continuous drain current	90	A	V <sub>GS</sub> = 18V, T <sub>C</sub> = 25°C	Fig.19
		64		V <sub>GS</sub> = 18V, T <sub>C</sub> = 100°C	
I <sub>D(pulse)</sub>	Pulsed				

U4 O 246452R3L



4522X UkE Rqygt OQUHGV

## 5 Gngevtkecn ejctcevgtkuvkeu

503 Uvcvke ejctcevgtkuvkeu

Vcd g 6 Uvcvke ejctcevgtkuvkeu (Tc = 25°C unless otherwise specified)

U{ o qn                      Rctc o gygt                      Okp0    V{r0    Ocz0    Wpkv                      Vguy Eqp f v



# U4O246452R3L



## 4522X U<sub>kE</sub> R<sub>qygt</sub> OQUHGV

Q <sub>gs</sub>	Gate source charge	-	34	-	nC	V <sub>DS</sub> = 1500V, V <sub>GS</sub> = -4/+18V I <sub>D</sub> = 60A	Fig.12
Q <sub>gd</sub>	Gate drain charge	-	33	-			
Q <sub>g</sub>	Gate charge	-	135	-			

### 505 U<sub>y</sub>kvejkpi ejctcevgtkuvkeu

V<sub>cdng</sub> 8 F{pc o ke ejctcevgtkuvkeu(T<sub>c</sub> = 25°C unless otherwise specified)

U{ o dq<sub>n</sub>      Rctc o gvgt      Okp<sub>0</sub>    V{r<sub>0</sub>    Ocz<sub>0</sub>    Wpkv      Vguv Eqp fkvkqpu      Pqvg

E<sub>on</sub>      Turn on



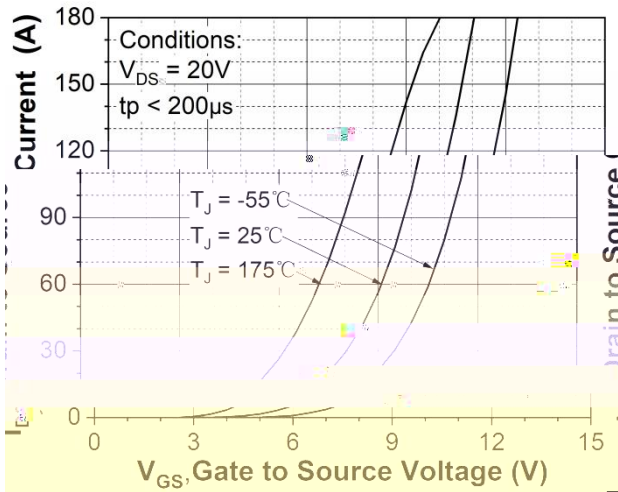


Figure 7. Transfer characteristic for various junction temperatures

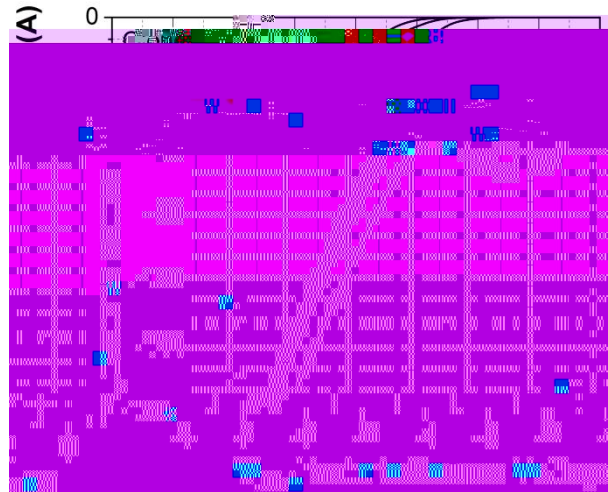


Figure 8. Body diode characteristic at  $T_J = -55^\circ\text{C}$

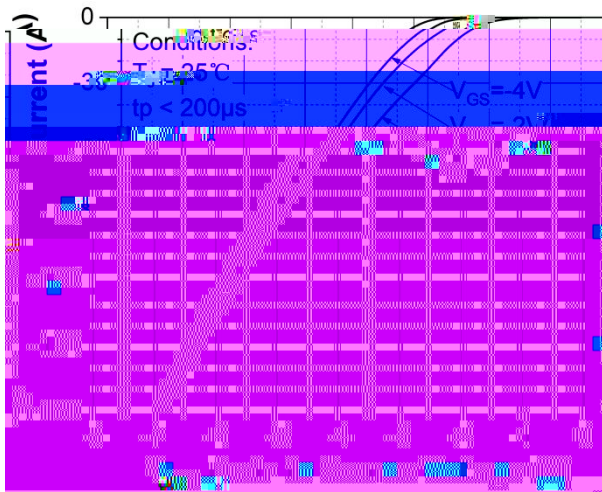


Figure 9. Body diode characteristic at  $T_J = 25^\circ\text{C}$

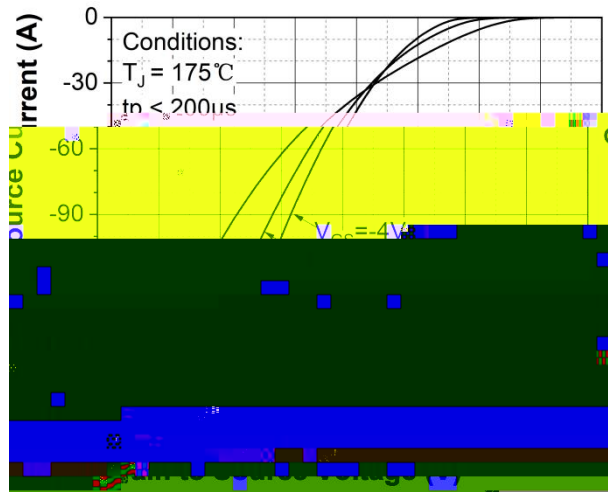


Figure 10. Body diode characteristic at  $T_J = 175^\circ\text{C}$

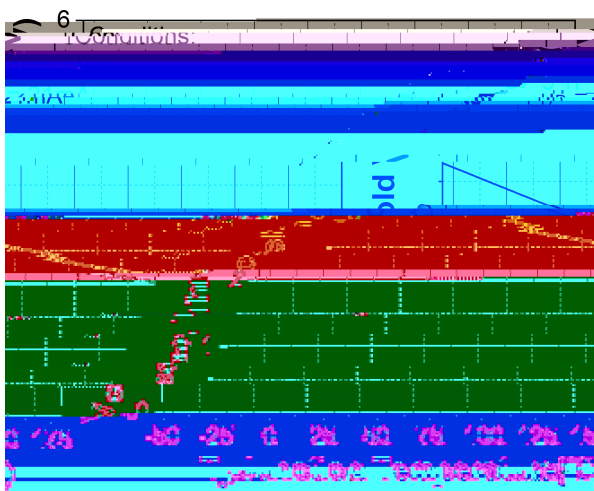


Figure 11. Threshold voltage vs. temperature

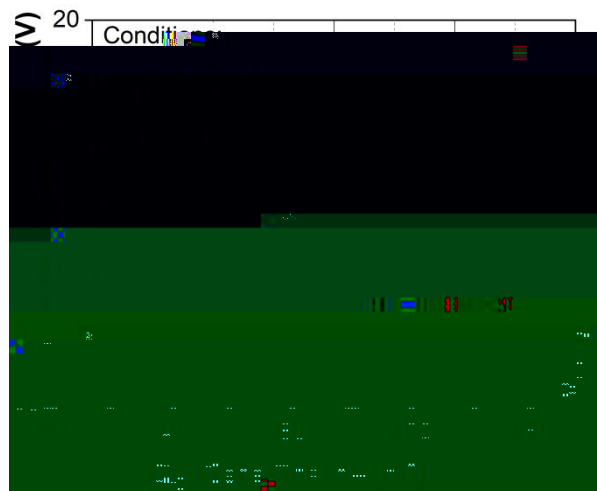


Figure 12. Gate charge characteristic

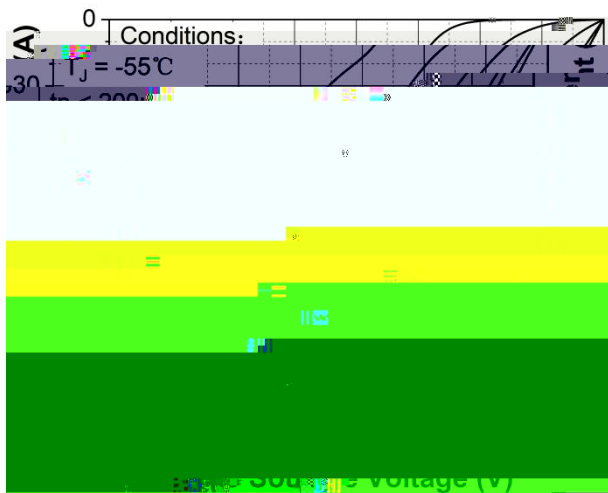


Figure 13. 3rd quadrant characteristic at  $T_j = -55^\circ\text{C}$

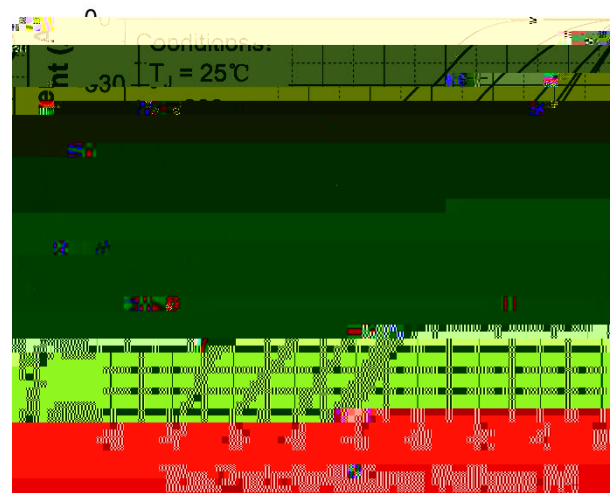


Figure 14. 3rd quadrant characteristic at  $T_j = 25^\circ\text{C}$

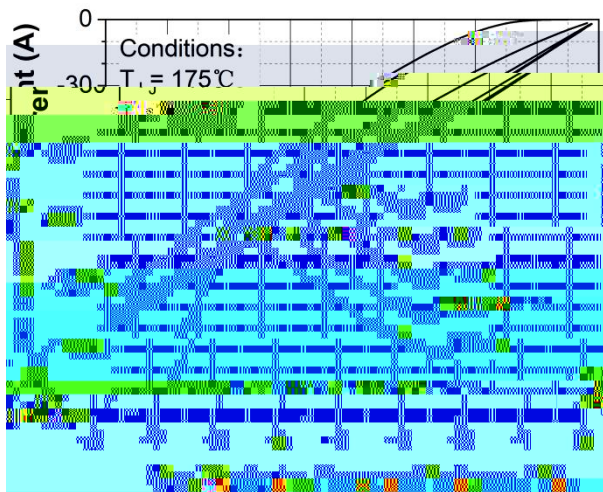


Figure 15. 3rd quadrant characteristic at  $T_j = 175^\circ\text{C}$

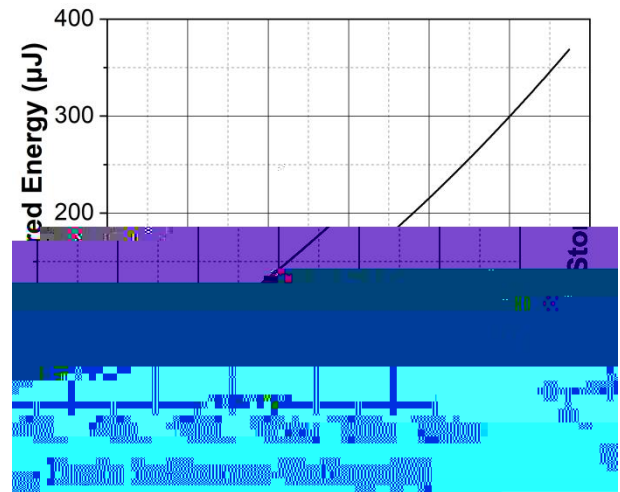


Figure 16. Output capacitor stored energy

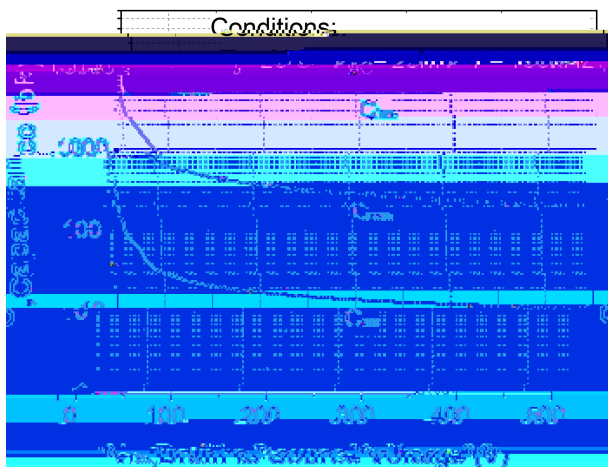


Figure 17. Capacitances vs. drain-source voltage (0 - 500V)

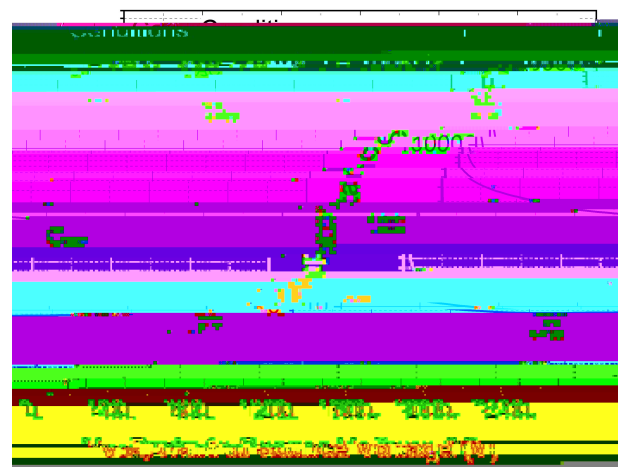


Figure 18. Capacitances vs. drain-source voltage (0 - 2300V)

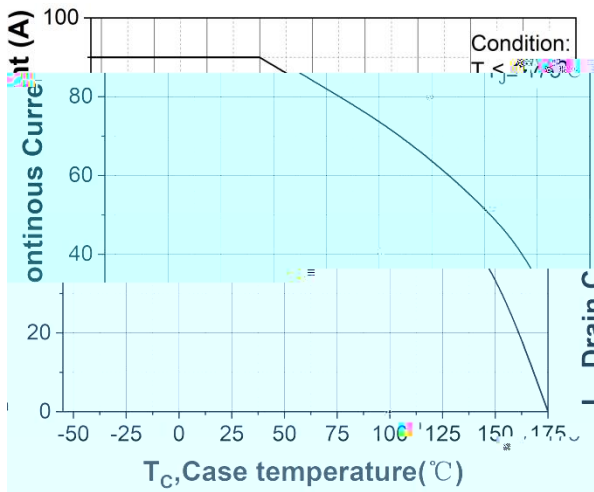


Figure 19. Continuous drain current derating vs. case temperature

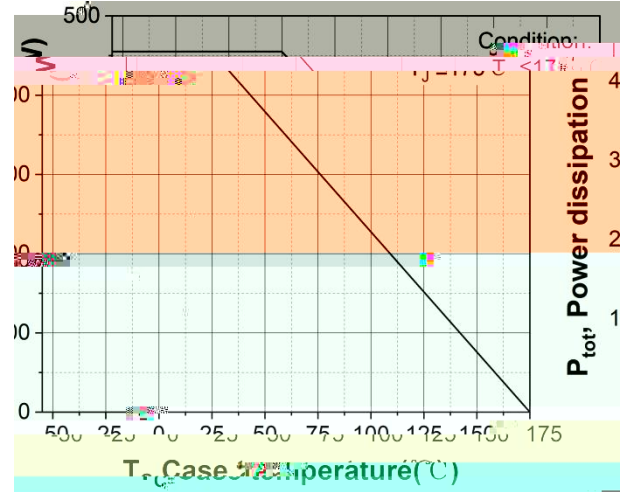


Figure 20. Maximum power dissipation derating vs. case temperature

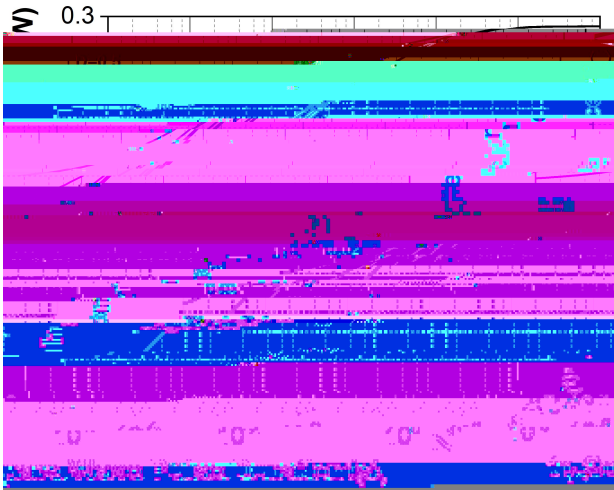


Figure 21. Transient thermal impedance (junction - case)

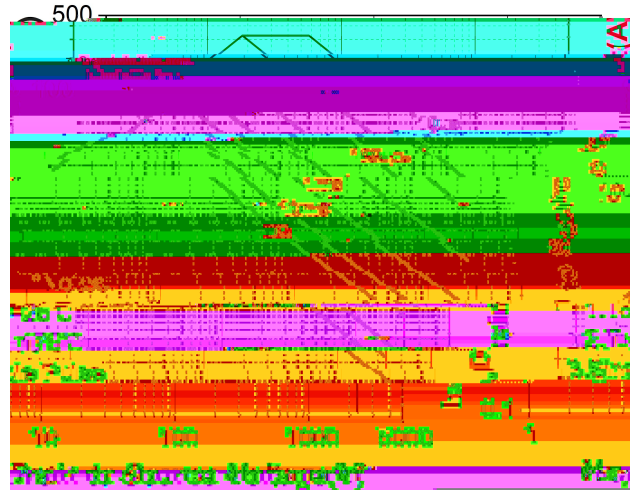


Figure 22. Safe operating area

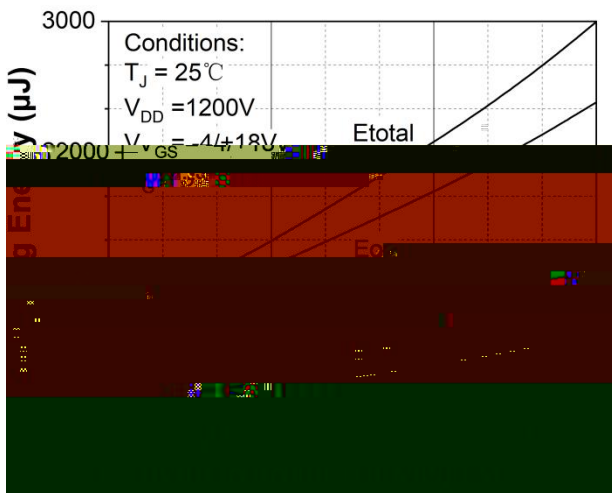


Figure 23. Clamped Inductive switching energy vs. drain current ( $V_{DD} = 1200V$ )

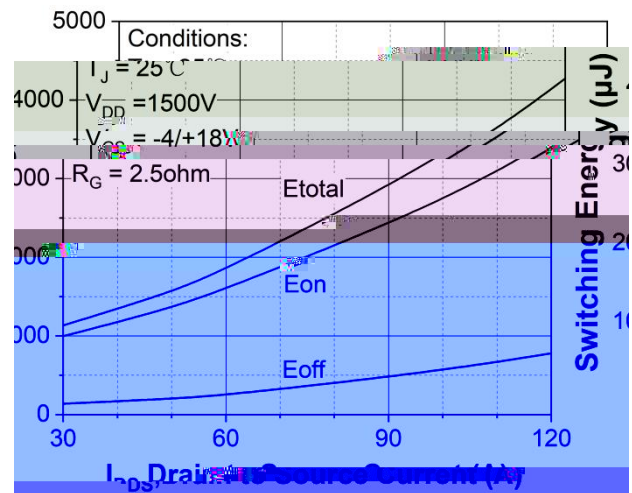


Figure 24. Clamped inductive switching energy vs. drain current ( $V_{DD} = 1500V$ )





## 8 Vguv eqpfkvkqpu

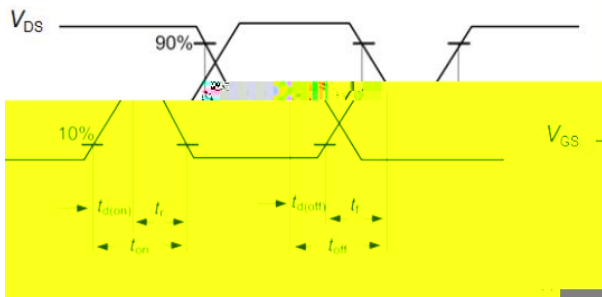


Figure A. Definition of switching times

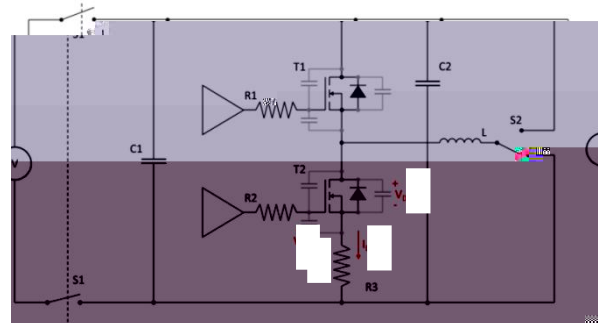


Figure B. Dynamic test circuit

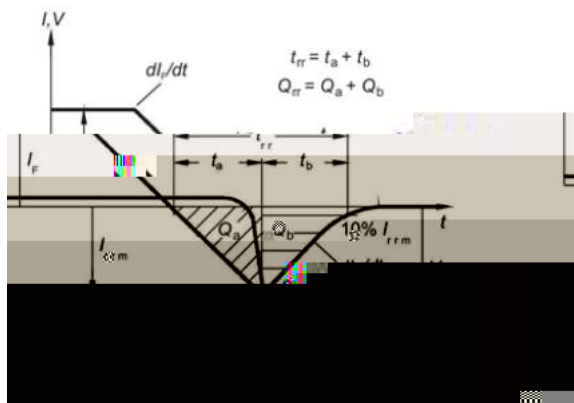


Figure C. Definition of body diode switching characteristics



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8. For use of our products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a Sichain representatives, for example but not limited to: transportation equipment, primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, and power transmission systems.