

GCMX005A120S7B1

QSiC™ 1200V SiC Half-Bridge Module

Features

V_{DS}	1200 V
$R_{DS,on}$	4.9 mΩ
I_D (TC=25°C)	348 A
$T_{J,max}$	175°C

Package

Benefits



Applications

Part #	Package	Marking
GCMX005A120S7B1	S7	GCMX005A120S7B1



Absolute Maximum Ratings

Characteristics	Symbol	Conditions	Values	Unit

Freewheeling Diode Characteristics

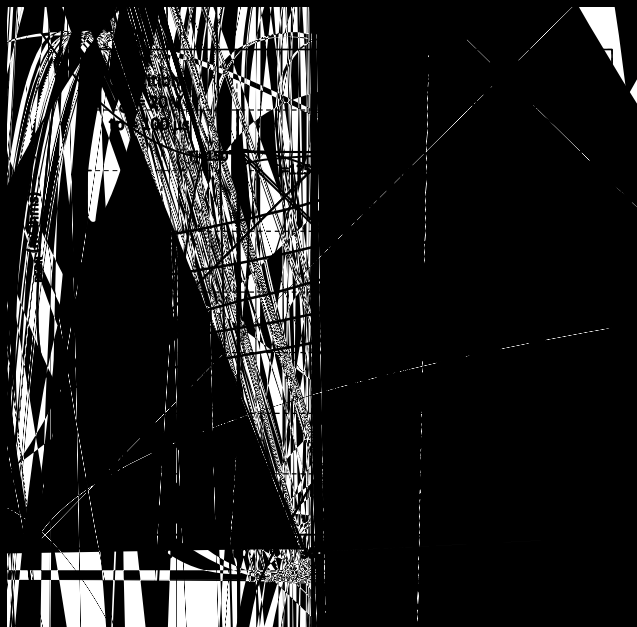
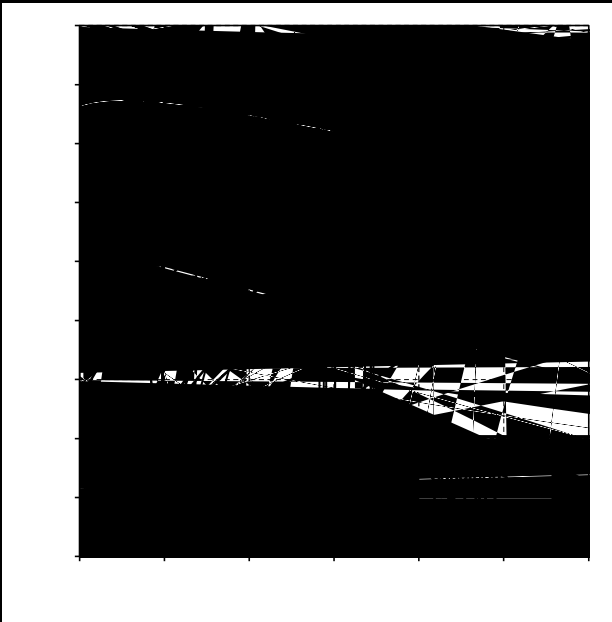
Characteristics	Symbol	Conditions	Values			Unit

Thermal and Package Characteristics

Characteristics	Symbol	Conditions	Values			Unit
						°

NTC Characteristics

Characteristics	Symbol	Conditions	Values			Unit
						kΩ



Parameters:
 $V_{DS} = 10$ V
 $V_{th} = 2.5$ V
 $t = 100 \mu s$

Parameters: $V_{DS} = 10$ V, $V_{th} = 2.5$ V, $I_{D(on)} = 10$ mA

Parameters: $V_{DS} = 10$ V, $V_{th} = 2.5$ V, $I_{D(on)} = 10$ mA

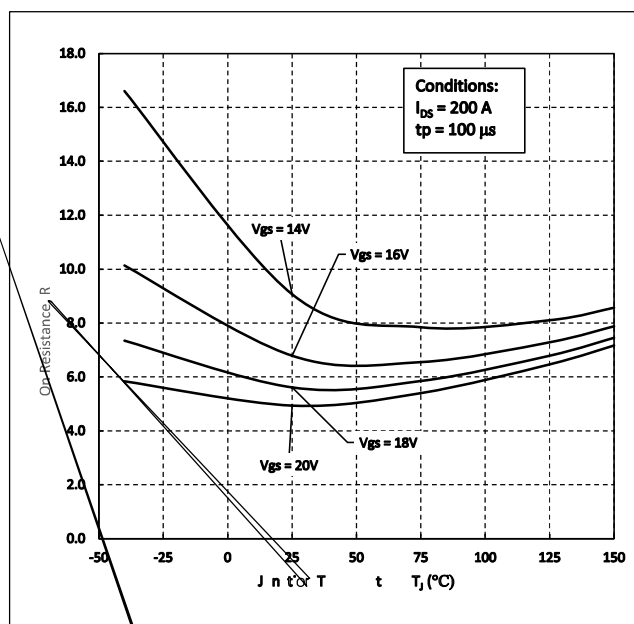


Figure 5. On-Resistance vs. Temperature For Various Gate Voltages

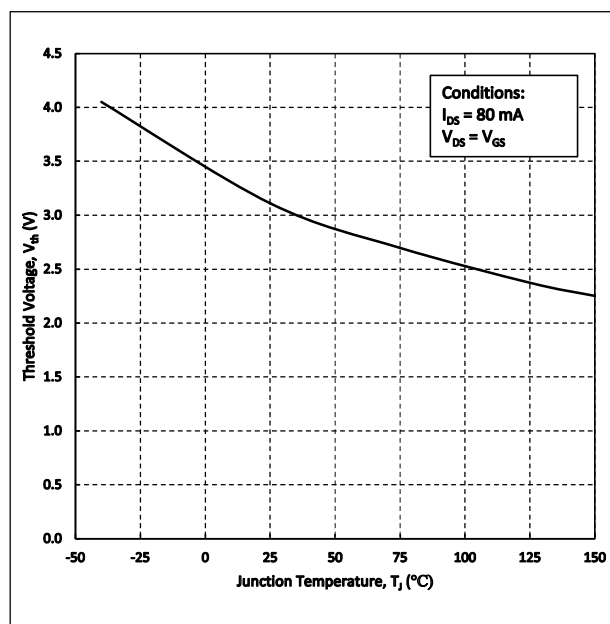


Figure 6. Threshold Voltage vs. Temperature

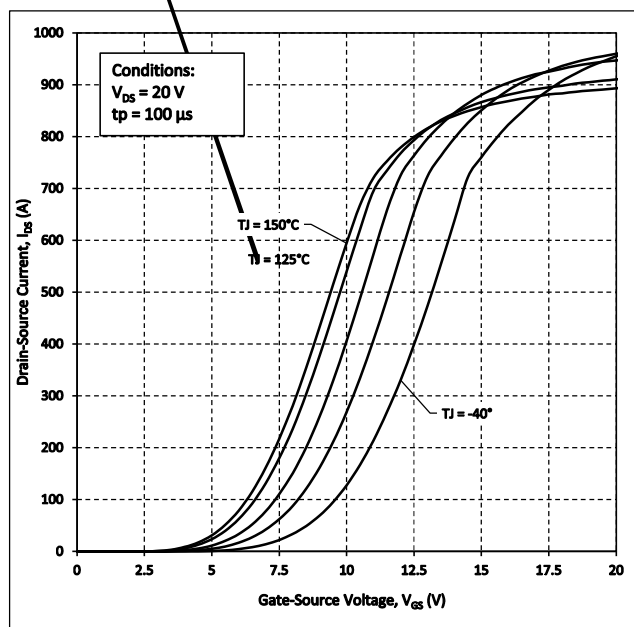


Figure 7. Transfer Characteristic for Various Junction Temperatures

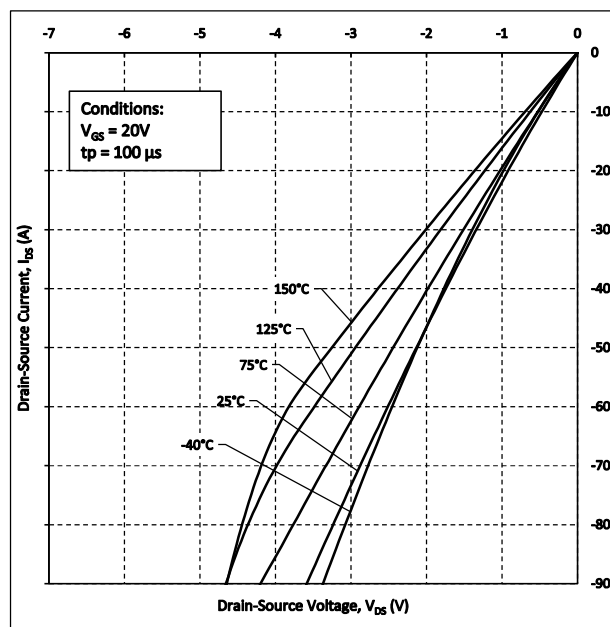
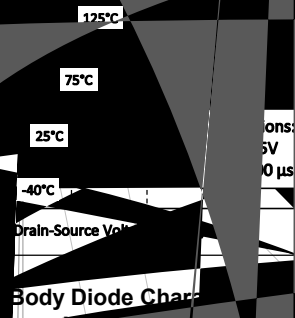
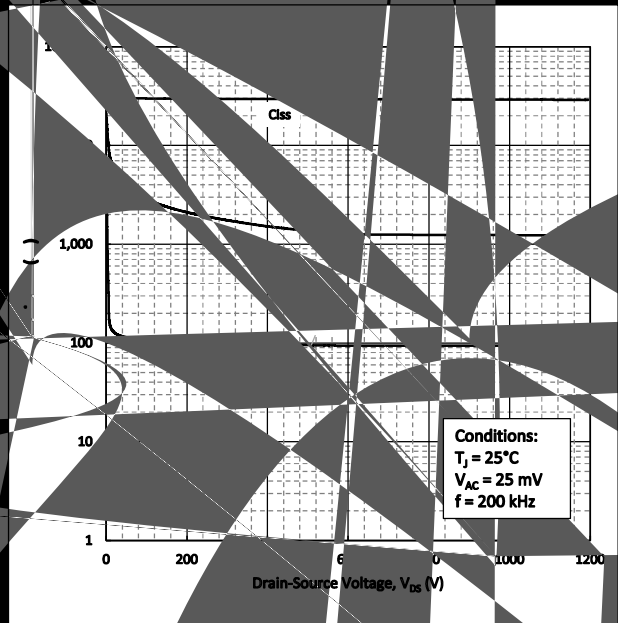
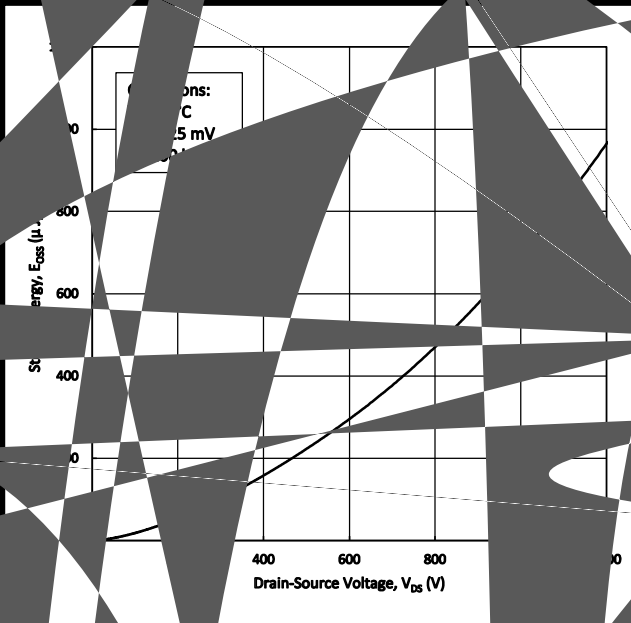


Figure 8. 3rd Quadrant Characteristics at $V_{GS} = 20V$



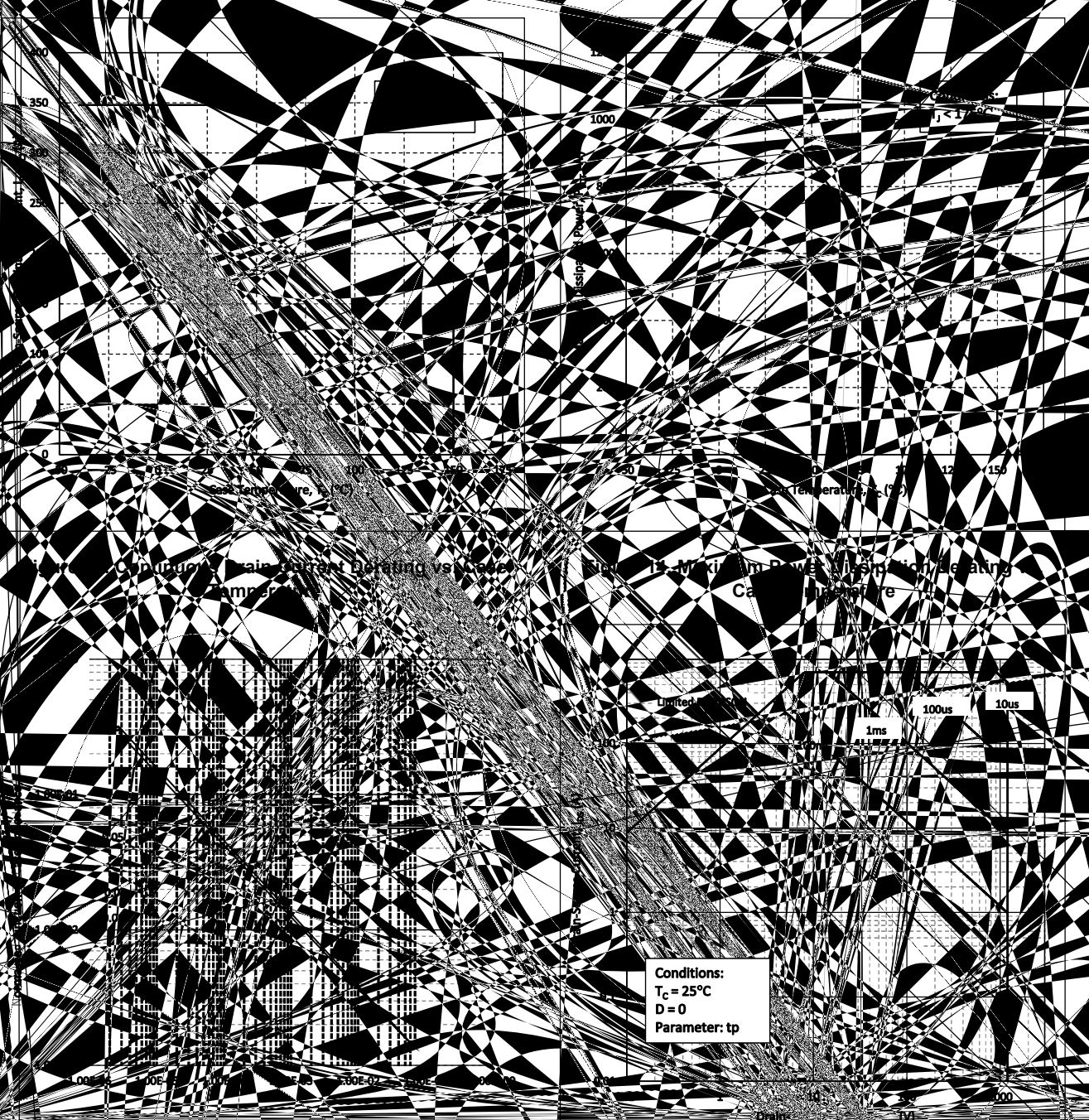


Fig. 15. Transient Thermal Resistance (Junction Case) vs. Case Temperature. Safe Operating Area

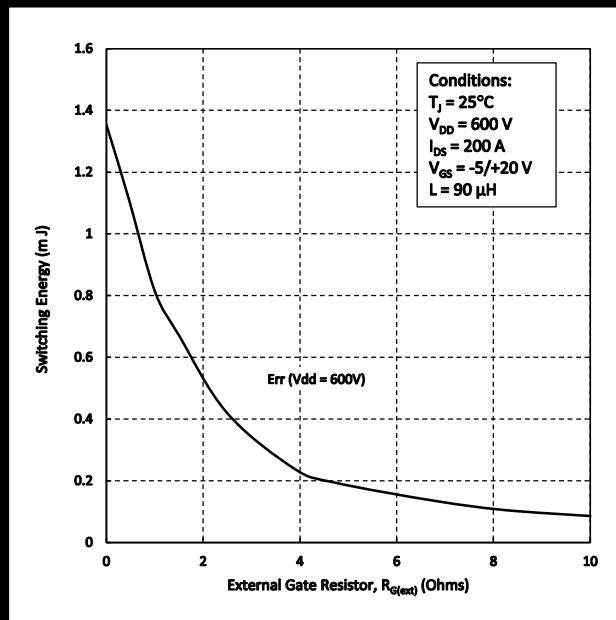
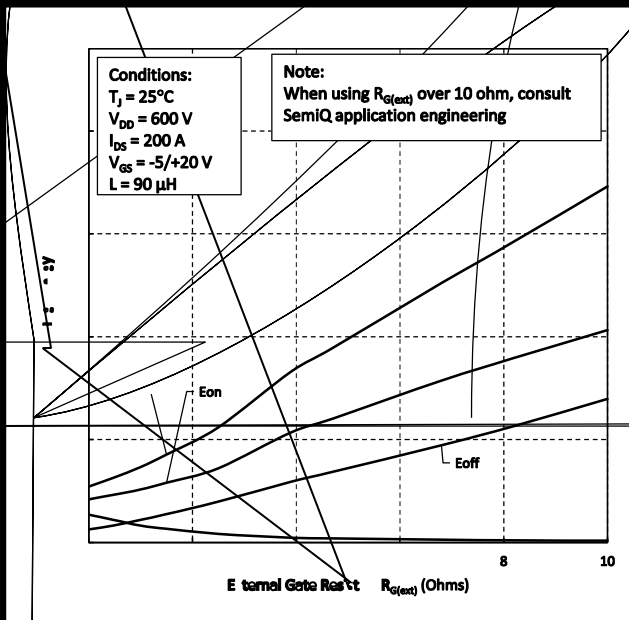
Page, $V_{GS}(V)$
15

Conditions:
 $T_J = 25^{\circ}\text{C}$
 $V_{DD} = 800\text{ V}$
 $R_{\theta JA} = 1\ \Omega$
 $V_{GS} = -5/+20\text{ V}$
 $L = 90\ \mu\text{H}$

Switching Energy

Eds

Conditions:
 $I_{DS} = 200 \text{ A}$
 $R_{G(ext)} = 1 \Omega$
 $V_{GS} = -5/+20 \text{ V}$
 $L = 90 \mu\text{H}$



ergy vs. $R_{G(ext)}$

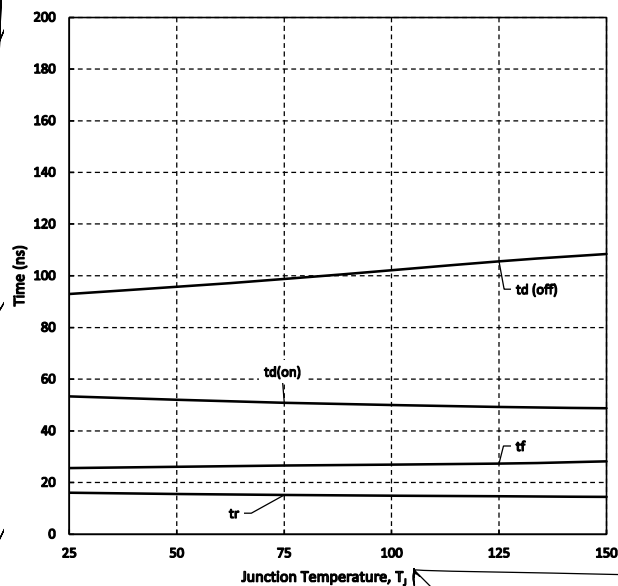
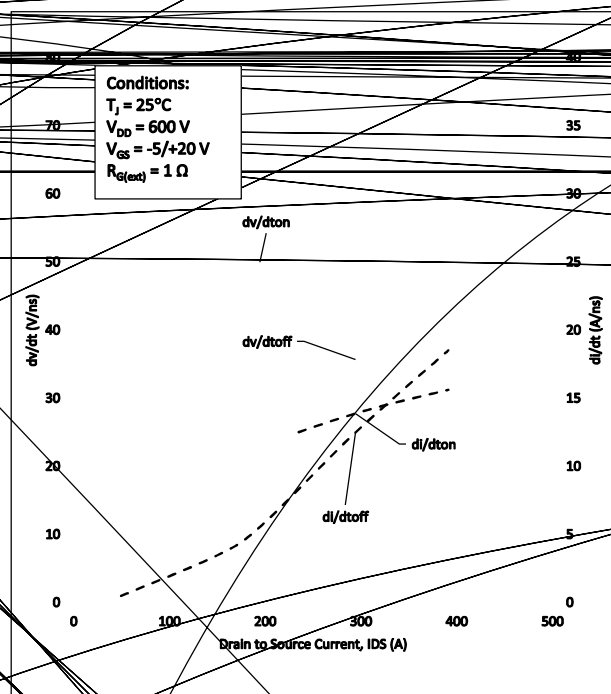
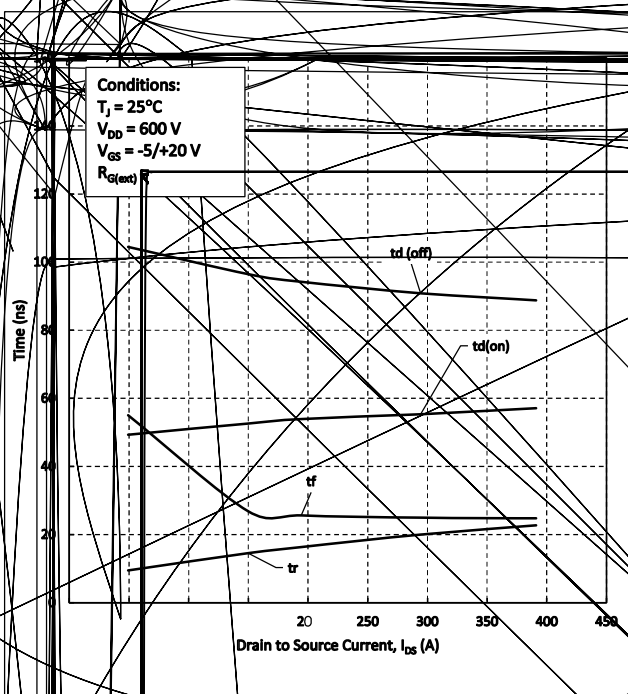


Figure 28. dv/dt and di/dt vs. Temperature

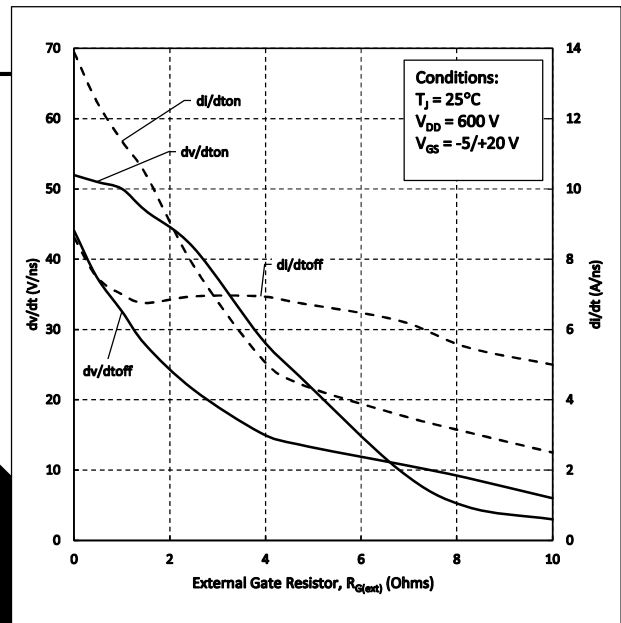
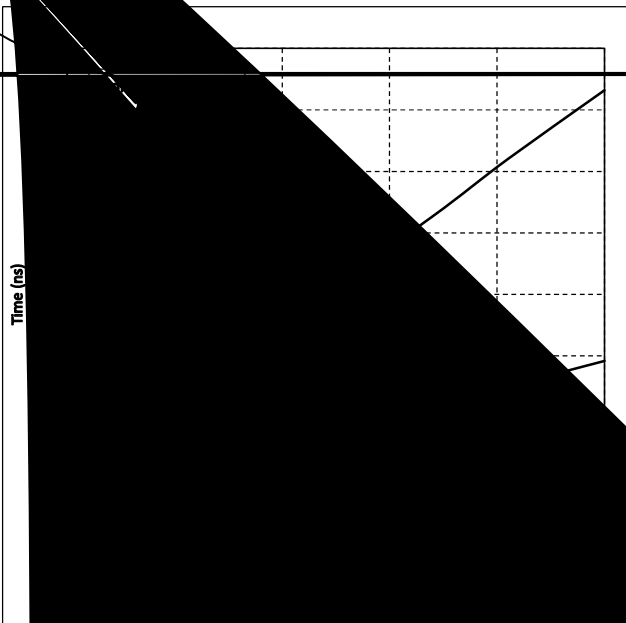
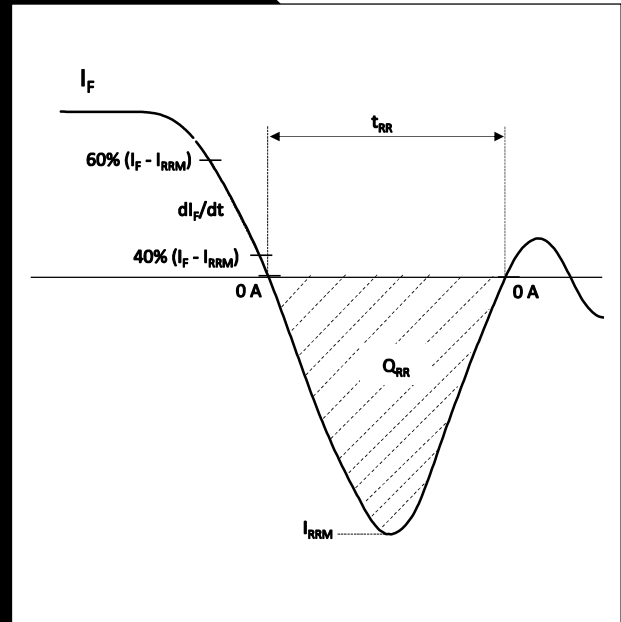
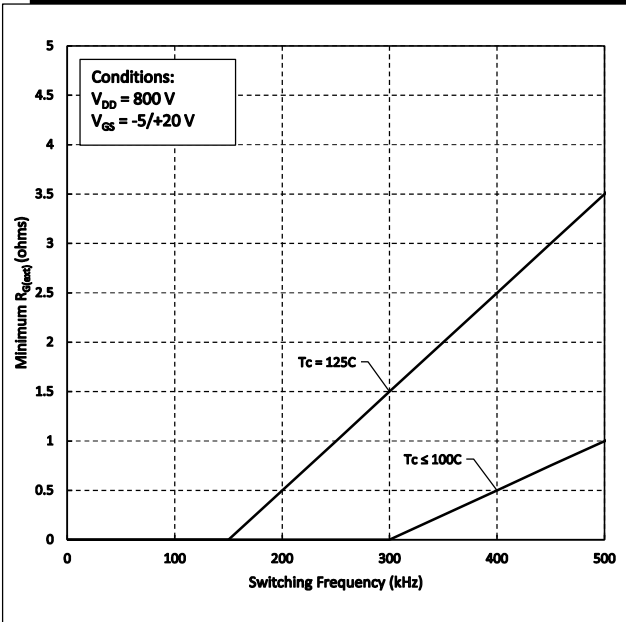


Fig. 10. dv/dt and di/dt vs. $R_{G(ext)}$



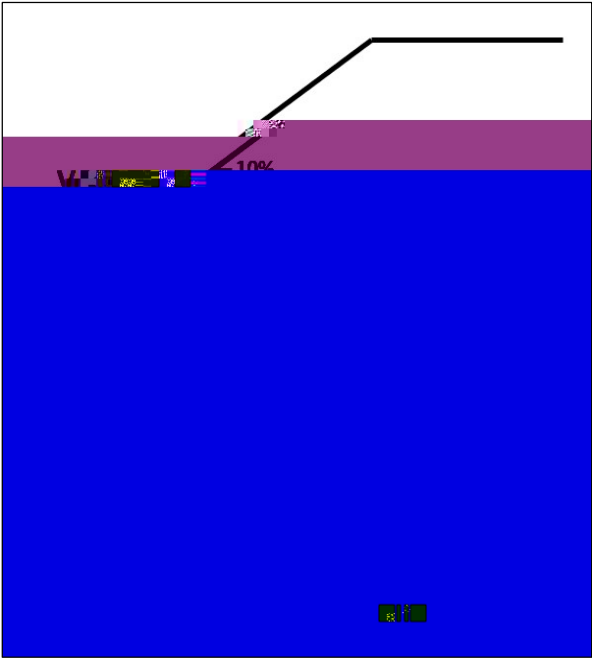


Figure 33. Turn-on Transient Definitions

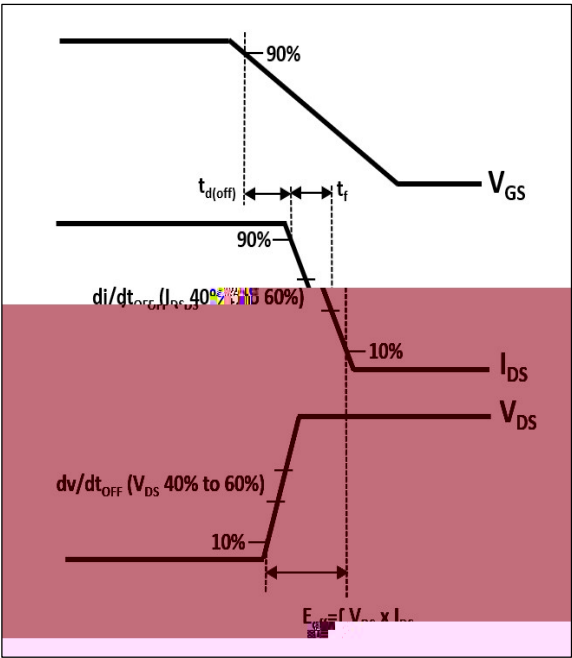


Figure 34. Turn-off Transient Definitions

Revision History		

Notes

RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented March, 2013. RoHS Declarations for this product can be obtained from the Product Documentation sections of www.SemiQ.com.

REACH Compliance

REACH substances of high concern (SVHC) information is available for this product. Since the European Chemicals Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact our office at SemiQ Headquarters in Lake Forest, California to insure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

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