

## 100V N-Channel MOSFET

### General Features

- Proprietary New Planar Technology
- $R_{DS(ON),typ.}=30m\Omega@V_{GS}=10V$
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

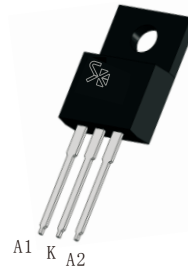
### Applications

- Automotive
- DC Motor Control

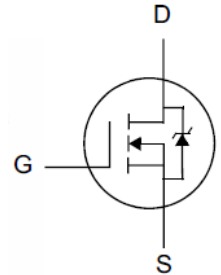
### Ordering Information

Part Number	Package
SK30N10B-TF	TO-220F

$BV_{DSS}$	$R_{DS(ON),typ.}$	$I_D$
100V	30m $\Omega$	33A



TO-220F



### Absolute Maximum Ratings

$T_C=25^{\circ}C$  unless otherwise specified

Symbol	Parameter	SK30N10B-TF	Unit
$V_{DSS}$	Drain-to-Source Voltage	100	V
$V_{GSS}$	Gate-to-Source Voltage	$\pm 20$	
$I_D$	Continuous Drain Current	33	A
$I_{DM}$	Pulsed Drain Current at $V_{GS}=10V$	Figure 6	
$E_{AS}$	Single Pulse Avalanche Energy	750	mJ
$P_D$	Power Dissipation	150	W
	Derating Factor above $25^{\circ}C$	1.0	W/ $^{\circ}C$
$T_L$	Soldering Temperature Distance of 1.6mm from case for 10 seconds	300	$^{\circ}C$
$T_J$ & $T_{STG}$	Operating and Storage Temperature Range	-55 to 175	

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

### Thermal Characteristics

Symbol	Parameter	SK30N10B-TF	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.0	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	75	

## Electrical Characteristics

### OFF Characteristics $T_J = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$BV_{DSS}$	Drain-to-Source Breakdown Voltage	100	--	--	V	$V_{GS}=0V, I_D=250\mu A$
$I_{DSS}$	Drain-to-Source Leakage Current	--	--	1	uA	$V_{DS}=100V, V_{GS}=0V$
		--	--	100		$V_{DS}=80V, V_{GS}=0V, T_J=125^\circ\text{C}$
$I_{GSS}$	Gate-to-Source Leakage Current	--	--	+100	nA	$V_{GS}=+20V, V_{DS}=0V$
		--	--	-100		$V_{GS}=-20V, V_{DS}=0V$

### ON Characteristics

$T_J = 25^\circ\text{C}$  unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	30	44	m $\Omega$	$V_{GS}=10V, I_D=17A$
$V_{GS(TH)}$	Gate Threshold Voltage	2.0	--	4.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
gfs	Forward Transconductance	--	80	--	S	$V_{DS}=15V, I_D=17A$

### Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$C_{iss}$	Input Capacitance	--	2700	--	pF	$V_{GS}=0V, V_{DS}=25V, f=1.0\text{MHz}$
$C_{rss}$	Reverse Transfer Capacitance	--	10	--		
$C_{oss}$	Output Capacitance	--	300	--		
$Q_g$	Total Gate Charge	--	37	--	nC	$V_{DD}=50V, I_D=17A, V_{GS}=0 \text{ to } 10V$
$Q_{gs}$	Gate-to-Source Charge	--	11	--		
$Q_{gd}$	Gate-to-Drain (Miller) Charge	--	8	--		

### Resistive Switching Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(ON)}$	Turn-on Delay Time	--	18	--	nS	$V_{DD}=50V, I_D=17A, V_{GS}=10V, R_G=9.1\Omega$
$t_{rise}$	Rise Time	--	20	--		
$t_{d(OFF)}$	Turn-Off Delay Time	--	53	--		
$t_{fall}$	Fall Time	--	7	--		

## Source-Drain Body Diode Characteristics

$T_J=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Unit	Test Conditions
$I_{SD}$	Continuous Source Current <sup>[2]</sup>	--	--	33	A	Integral PN-diode in MOSFET
$I_{SM}$	Pulsed Source Current <sup>[2]</sup>	--	--	132		
$V_{SD}$	Diode Forward Voltage	--	--	1.5	V	$I_S=33\text{A}$ , $V_{GS}=0\text{V}$
$t_{rr}$	Reverse recovery time	--	150	--	ns	$I_F=33\text{A}$ , $di_F/dt=100\text{A}/\mu\text{s}$
$Q_{rr}$	Reverse recovery charge	--	0.55	--	uC	

## Typical Characteristics

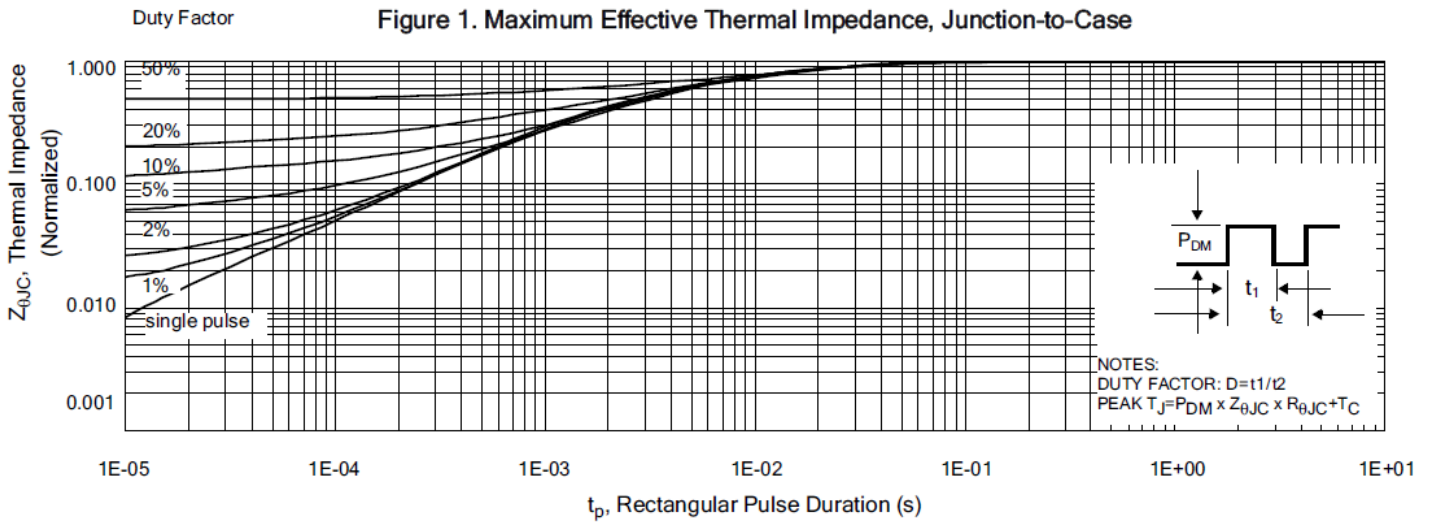


Figure 2. Maximum Power Dissipation vs Case Temperature

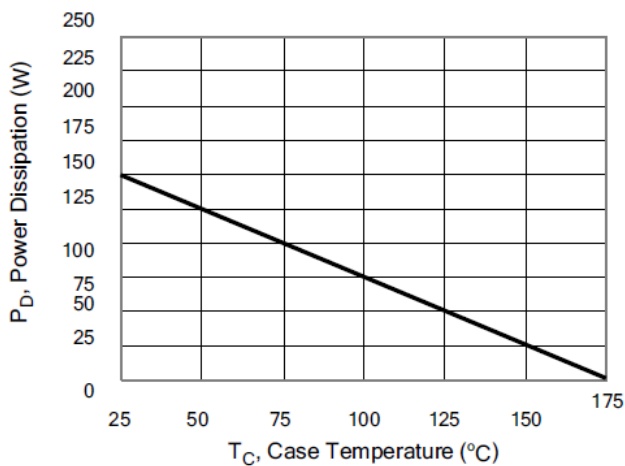


Figure 3. Maximum Continuous Drain Current vs Case Temperature

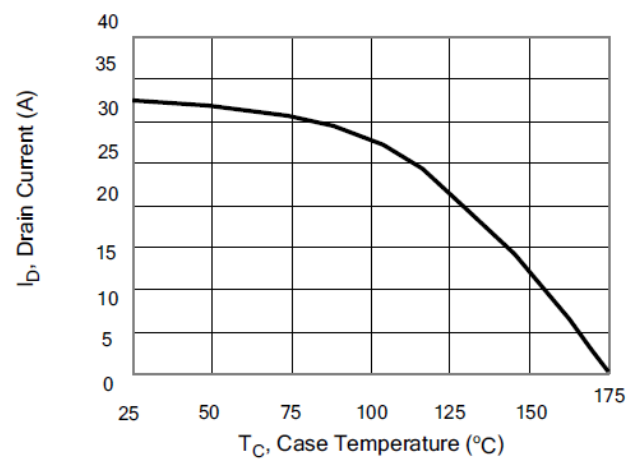


Figure 4. Typical Output Characteristics

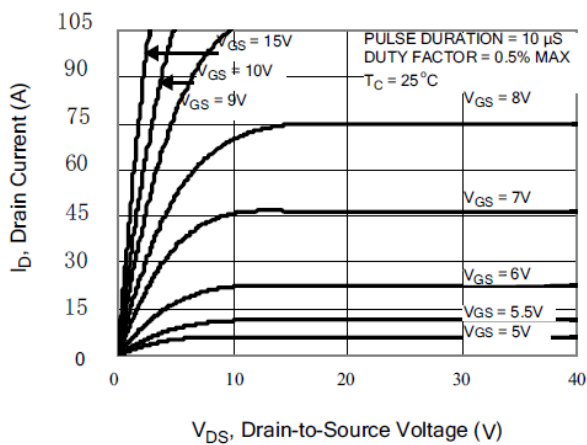
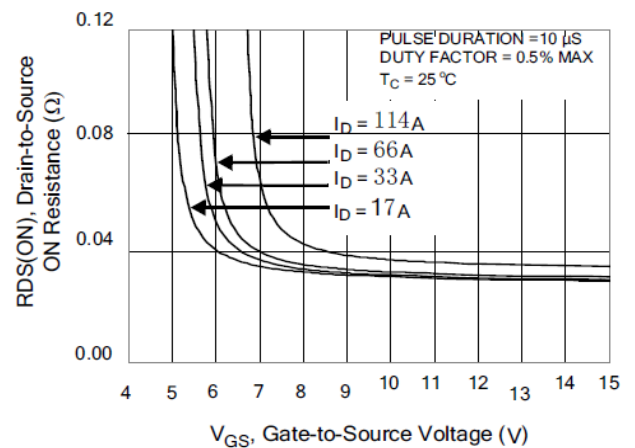


Figure 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current



## Typical Characteristics(Cont.)

Figure 6. Maximum Peak Current Capability

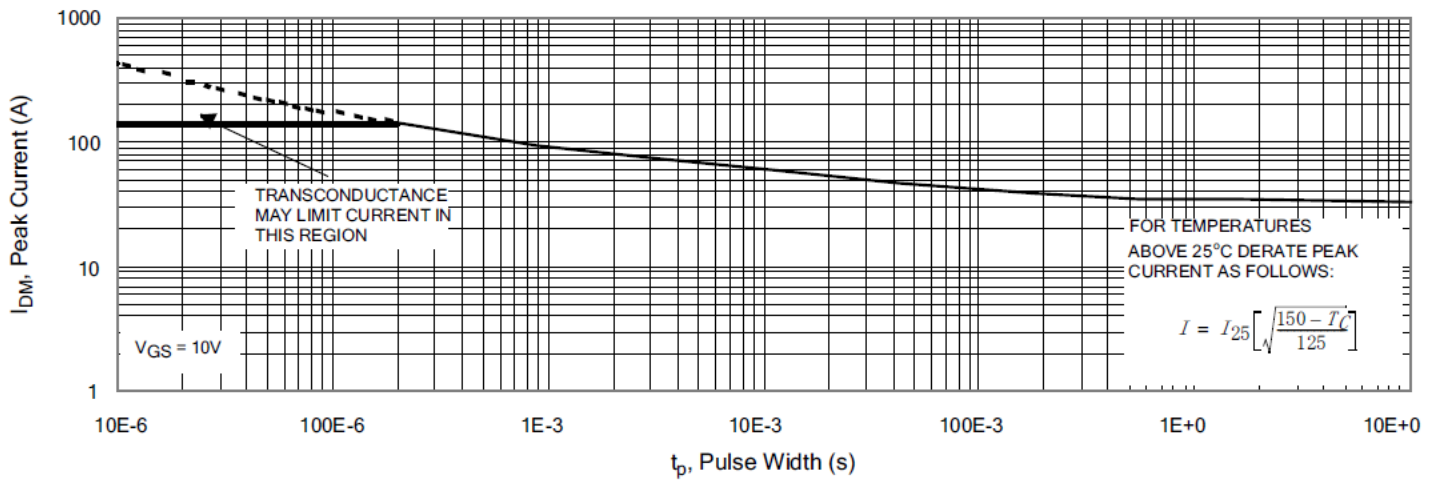


Figure 7. Typical Transfer Characteristics

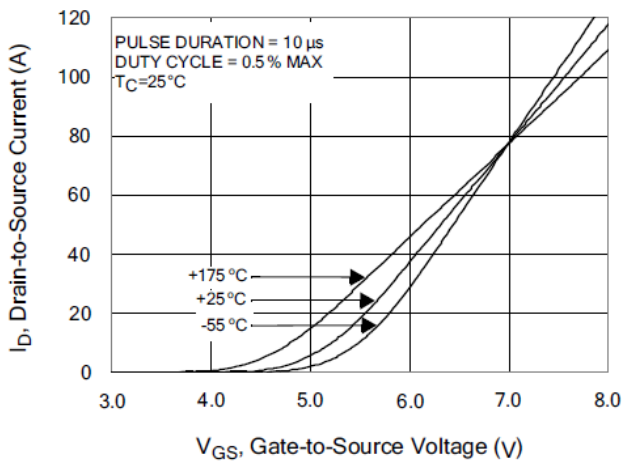


Figure 8. Unclamped Inductive Switching Capability

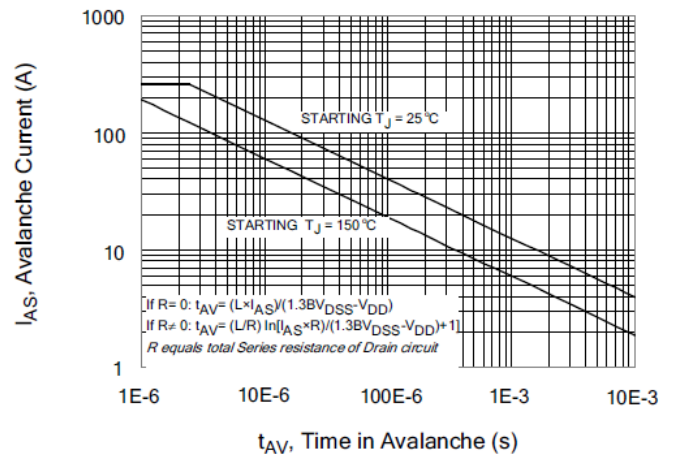


Figure 9. Typical Drain-to-Source Resistance vs Drain Current

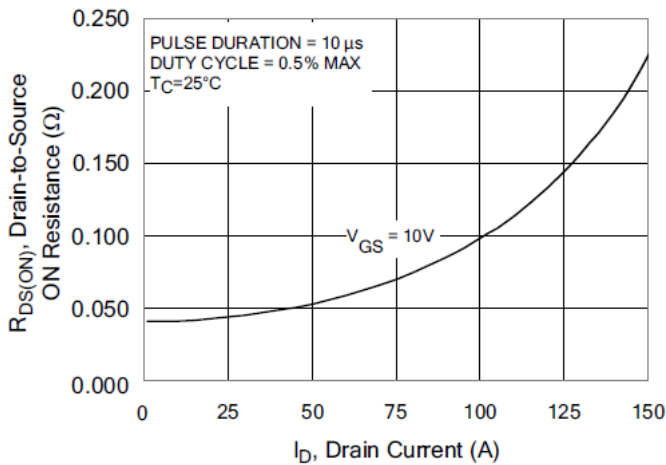
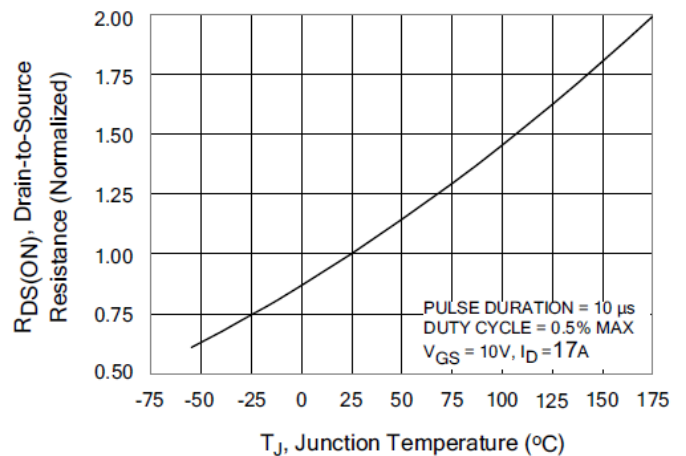


Figure 10. Typical Drain-to-Source Resistance vs Junction Temperature



## Typical Characteristics(Cont.)

Figure 11. Typical Breakdown Voltage vs Junction Temperature

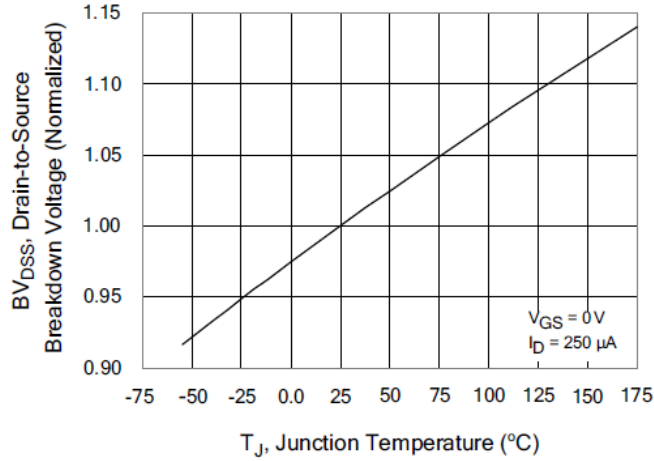


Figure 12. Typical Threshold Voltage vs Junction Temperature

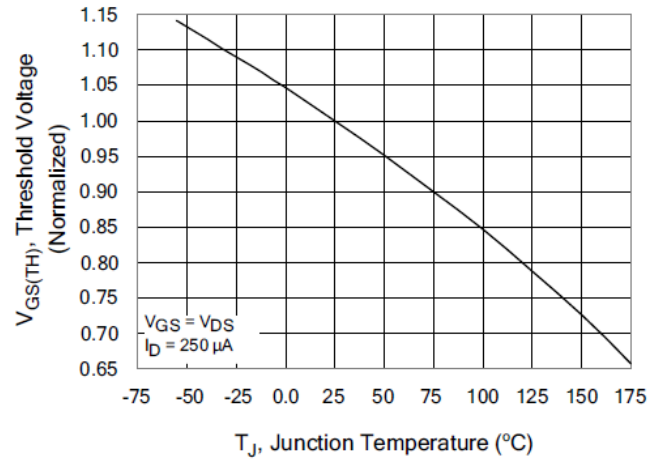


Figure 13. Maximum Forward Bias Safe Operating Area

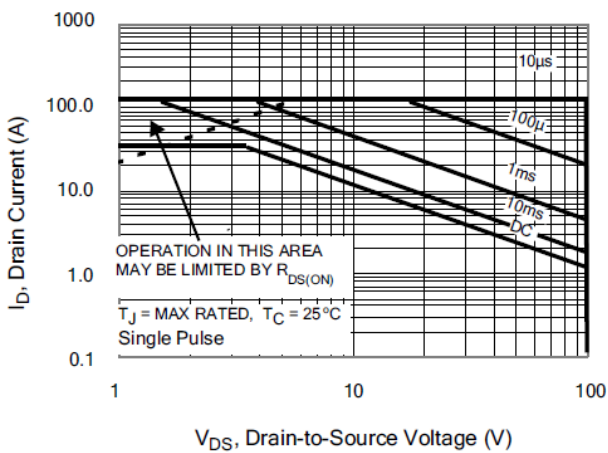


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

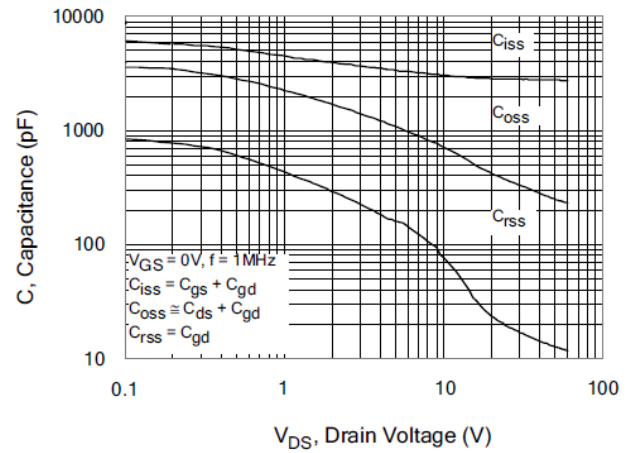


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

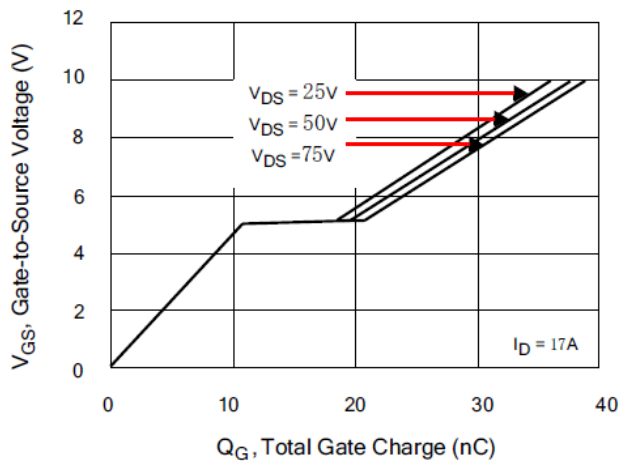
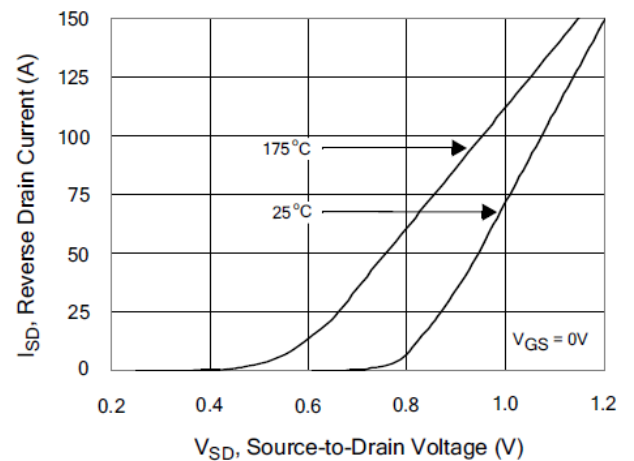


Figure 16. Typical Body Diode Transfer Characteristics



## Test Circuits and Waveforms

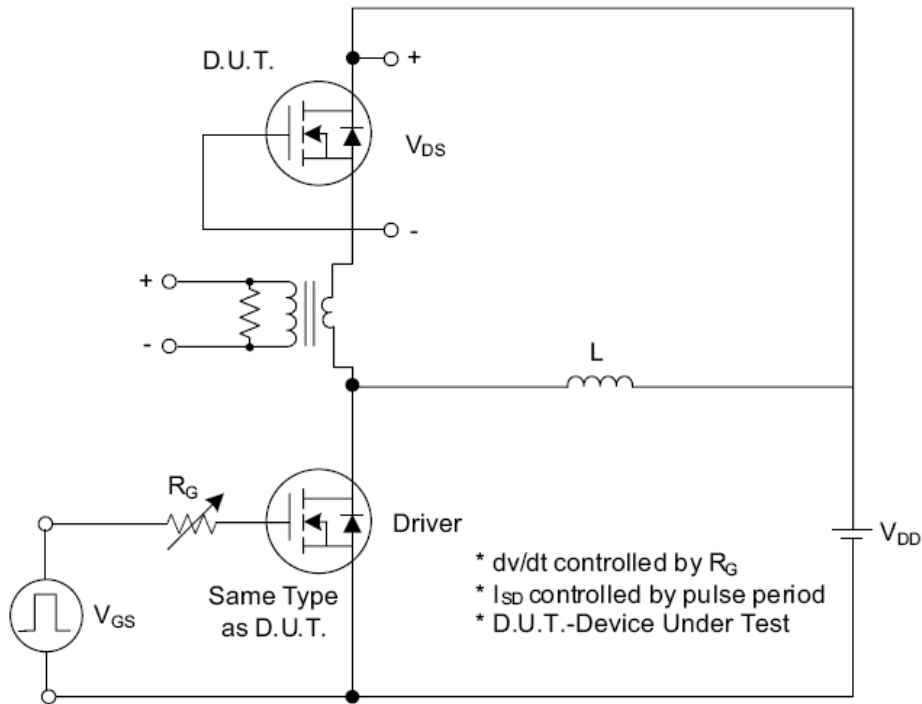


Fig. 1.1 Peak Diode Recovery  $dv/dt$  Test Circuit

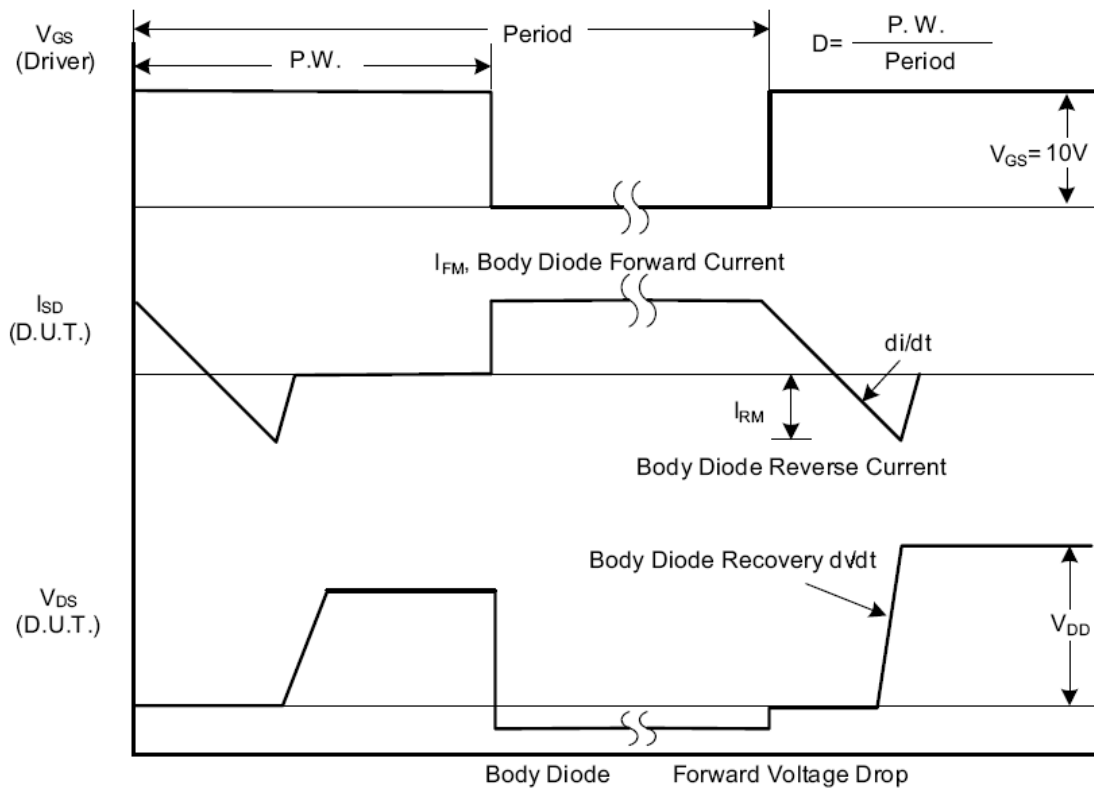


Fig. 1.2 Peak Diode Recovery  $dv/dt$  Waveforms

## Test Circuits and Waveforms (Cont.)

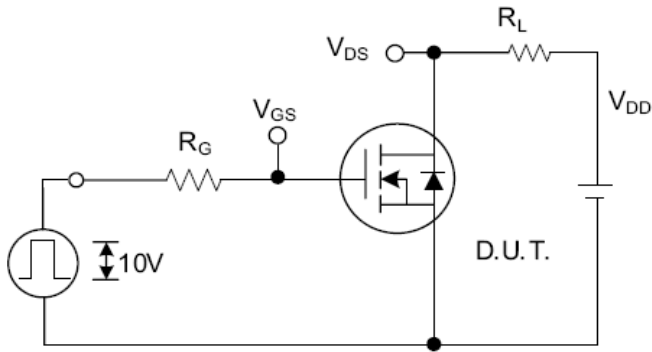


Fig. 2.1 Switching Test Circuit

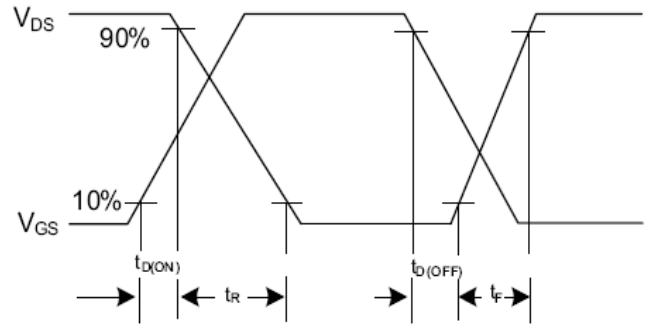


Fig. 2.2 Switching Waveforms

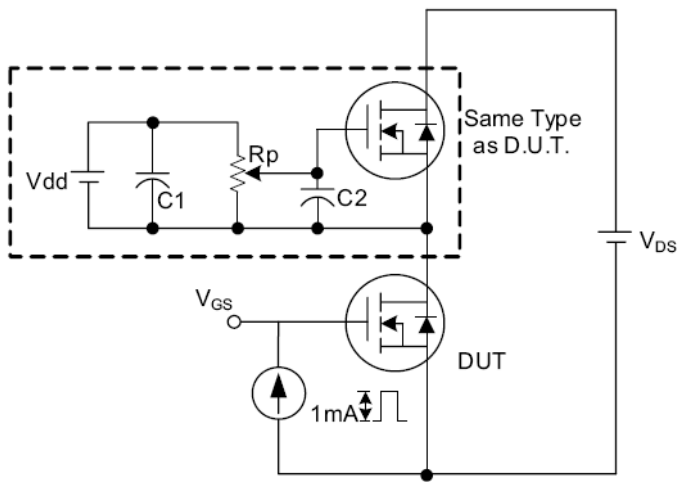


Fig. 3.1 Gate Charge Test Circuit

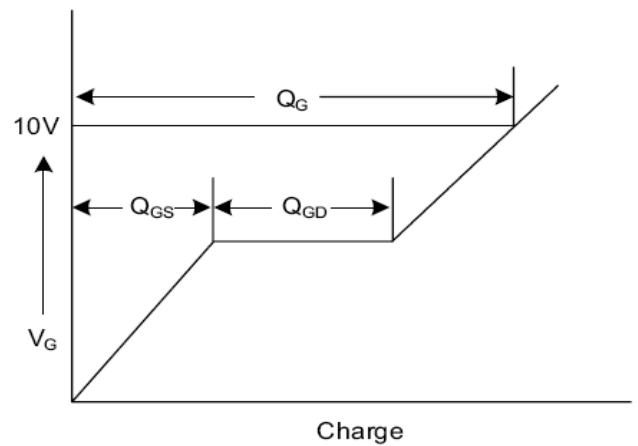


Fig. 3.2 Gate Charge Waveform

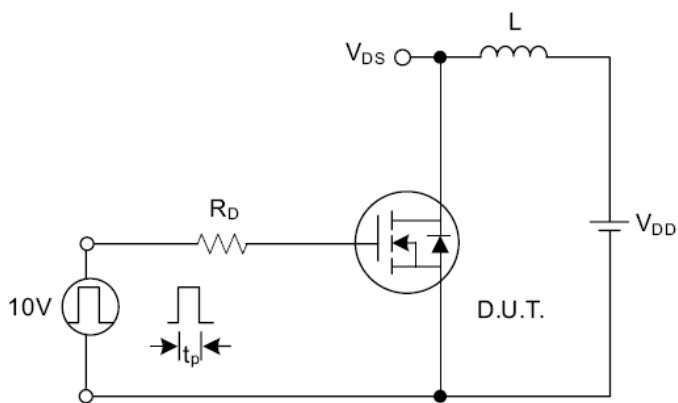


Fig. 4.1 Unclamped Inductive Switching Test Circuit

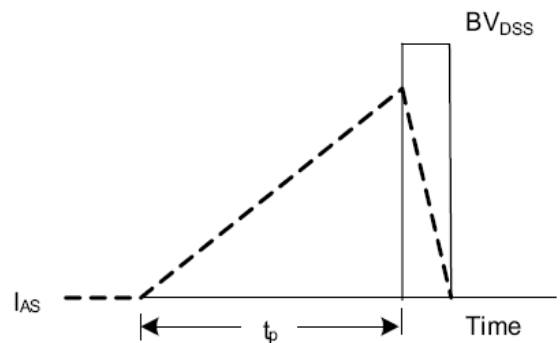


Fig. 4.2 Unclamped Inductive Switching Waveforms



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [MOSFET](#) category:*

*Click to view products by [Shikues](#) manufacturer:*

Other Similar products are found below :

[IRFD120](#) [JANTX2N5237](#) [BUK455-60A/B](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#) [IPS70R2K0CEAKMA1](#) [SQD23N06-31L-GE3](#)  
[TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [DMN1053UCP4-7](#) [SQJ469EP-T1-GE3](#) [NTE2384](#) [DMC2700UDMQ-7](#)  
[DMN2080UCB4-7](#) [DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#)  
[STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [DMTH10H4M6SPS-13](#) [DMN2990UFB-7B](#)  
[IPB80P04P405ATMA2](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [MCQ7328-TP](#) [NTMC083NP10M5L](#) [BXP7N65D](#) [BXP4N65F](#) [AOL1454G](#)  
[WMJ80N60C4](#) [BXP2N20L](#) [BXP2N65D](#) [BXT1150N10J](#) [BXT1700P06M](#) [TSM60NB380CP](#) [ROG](#) [RQ7L055BGTGR](#) [DMNH15H110SK3-13](#)  
[SLF10N65ABV2](#) [BSO203SP](#) [BSO211P](#) [IPA60R230P6](#)