SHANGHAI SINO-IC
MICROELECTRONICS CO., LTD.

SE110NS65FR

N-Channel Enhancement Mode Field Effect Transistor

Features

$V_{(BR)DSS}$	$R_{DS(ON)typ}$	I_D
650V	26mΩ	110A

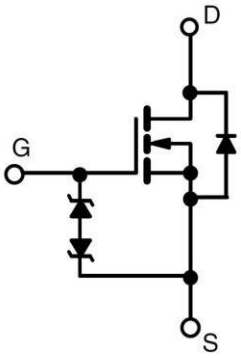
FRD MOSFET
ESD protect

Application

. LED lighting

. Charger

. Adapter



ABSOLUTE MAXIMUN RATINGS

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Drain-Source Voltage	V_{DS}	650	V
Drain Current –continuous @25°C	I_D	110	A
Drain Current –continuous @100°C	I_D	48	A
Pulsed Drain Current[1]	I_{DM}	320	A
Gate-Source Voltage	V_{GS}	±30	V
Single Pulse Avalanche[2]	E_{AS}	3.5	J
Operating Junction & Storage Temperature	T_j, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10sec.)	T_L	300	°C

Note:

1. Pulse width limited by maximum junction temperature.
2. V_{DD} = 90V, V_{DS} = 650V, L=30mH

N-Channel Enhancement Mode Field Effect Transistor

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	650			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	3	3.5	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 650V, V_{GS} = 0V			10	μA
		V_{DS} = 650V, V_{GS} = 0V, T_J =150°C			100	
On-State Drain Current	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 40A		26	30	mΩ
Body Diode Forward Voltage	V_{SD}	T_J = 25°C, V_{GS} = 0V, I_{SD} = 80A		1.0	1.4	V
DYNAMIC PARAMETERS						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V, f = 100 KHz		8520		pF
Output Capacitance	C_{oss}			574		
Reverse Transfer Capacitance	C_{rss}			21		
Total Gate Charge	Q_g	V_{DD} = 400V, I_D = 40A, V_{GS} = 10V		195		nC
Gate-Source Charge	Q_{gs}			51		
Gate-Drain Charge	Q_{gd}			62		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{(on)}$	V_{GS} = 10V, V_{DS} = 400V, I_D = 40A, R_G = 2Ω,		53.2		ns
Rise Time	t_r			87.3		
Turn-Off Delay Time	$t_{(off)}$			102.8		
Fall Time	t_f			4		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				80	A
Forward Voltage	V_{SD}	I_F =Is, V_{GS} = 0V			1.5	V
Body Diode Reverse Recovery Time	T_{rr}	I_F =40A, di/dt =100A/us		230		nS
Body Diode Reverse Recovery Charge	Q_{rr}			1.8		uC

Typical Performance Characteristics

Safe operating area TC=25 ℃
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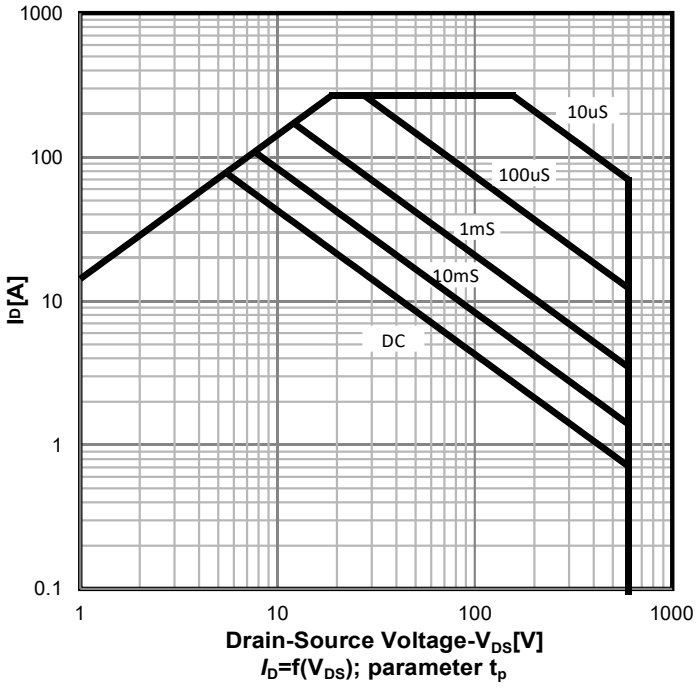
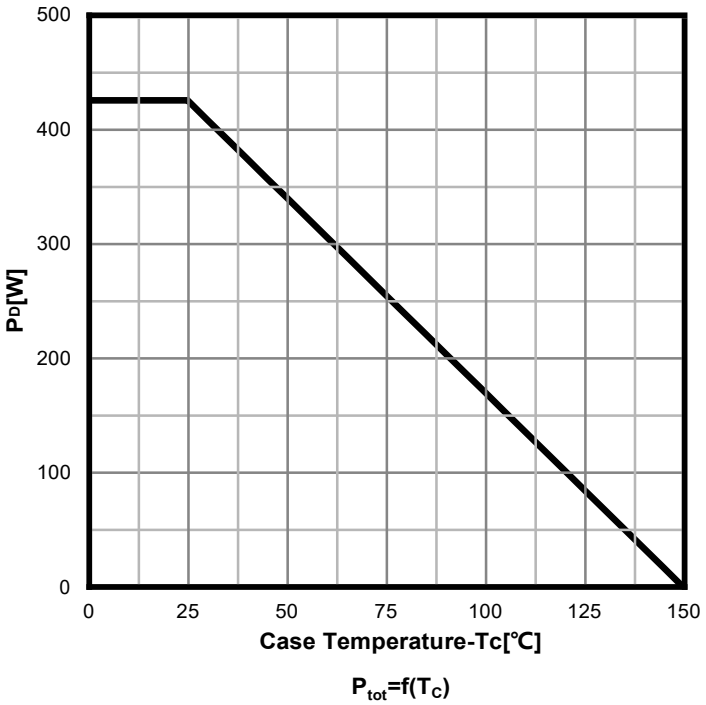
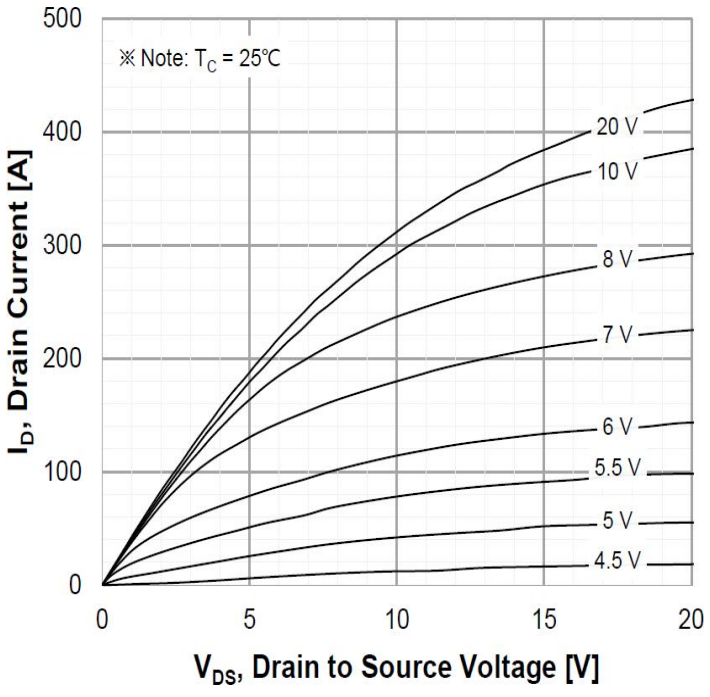


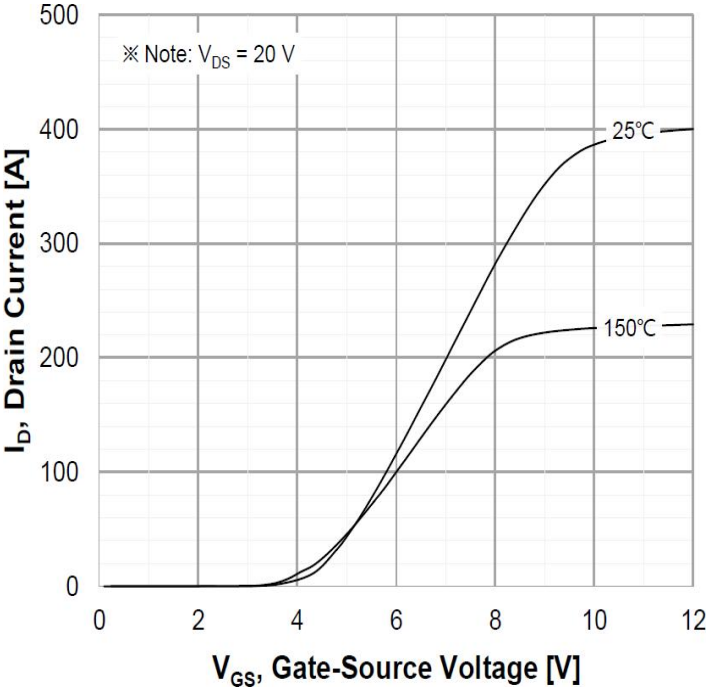
Power dissipation



Typ. output characteristics T_j=25 ℃

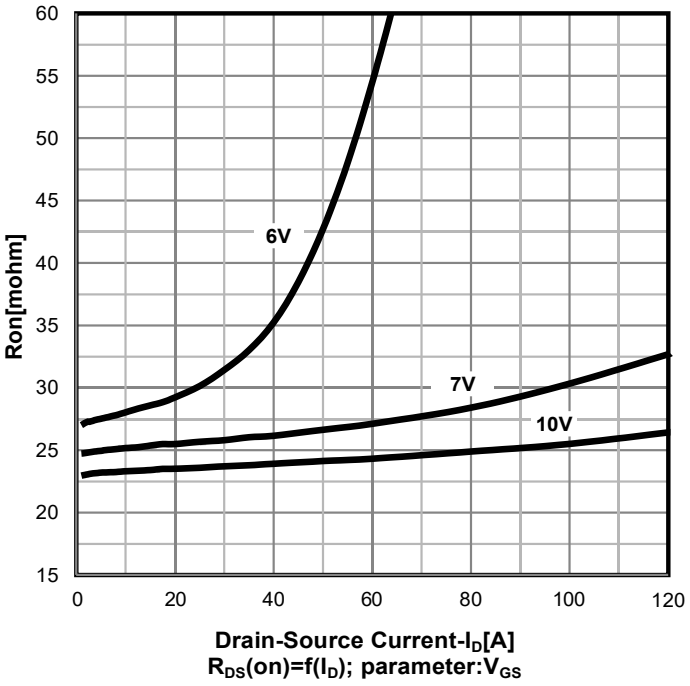


Transfer characteristics

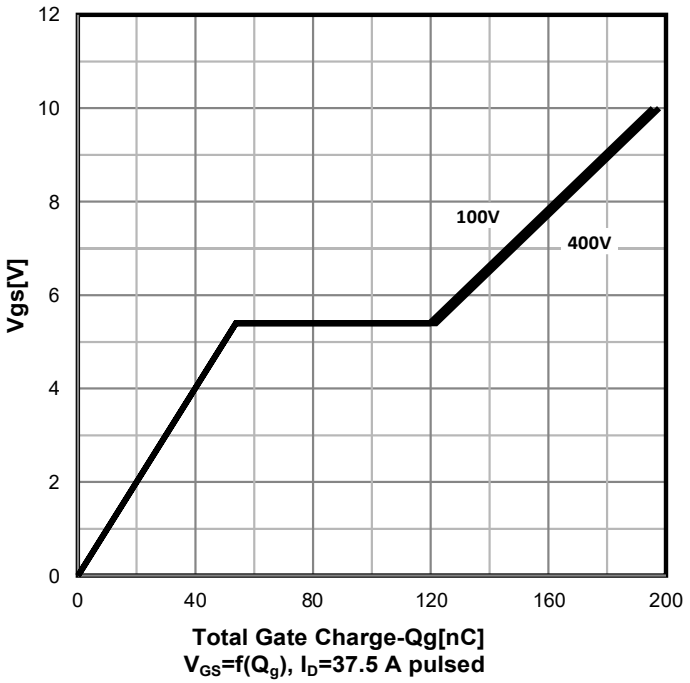


Typical Performance Characteristics

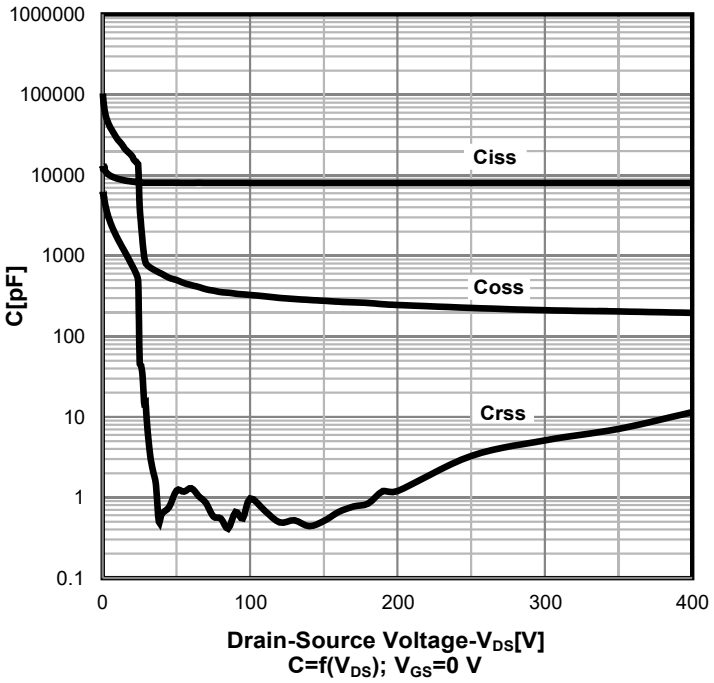
Typ. drain-source on-state resistance



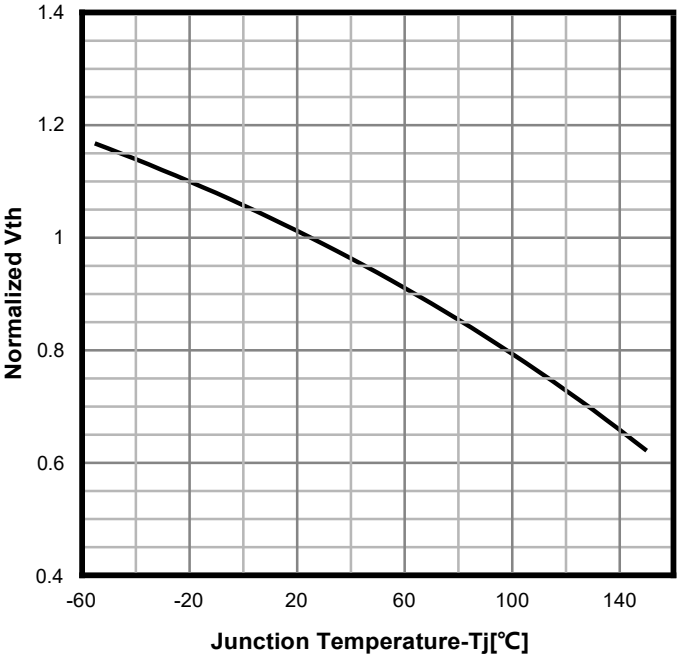
Typ. gate charge characteristics



Typ. capacitances

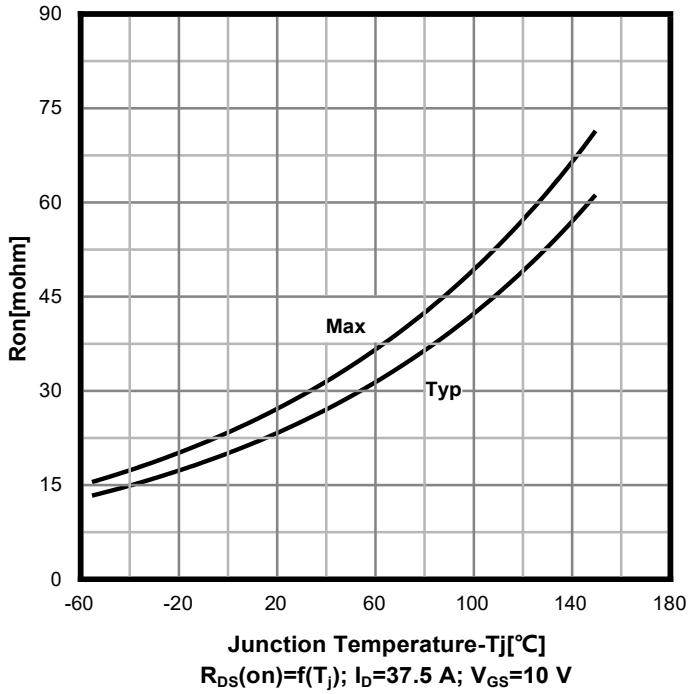


Normalized $V_{GS(th)}$ characteristics



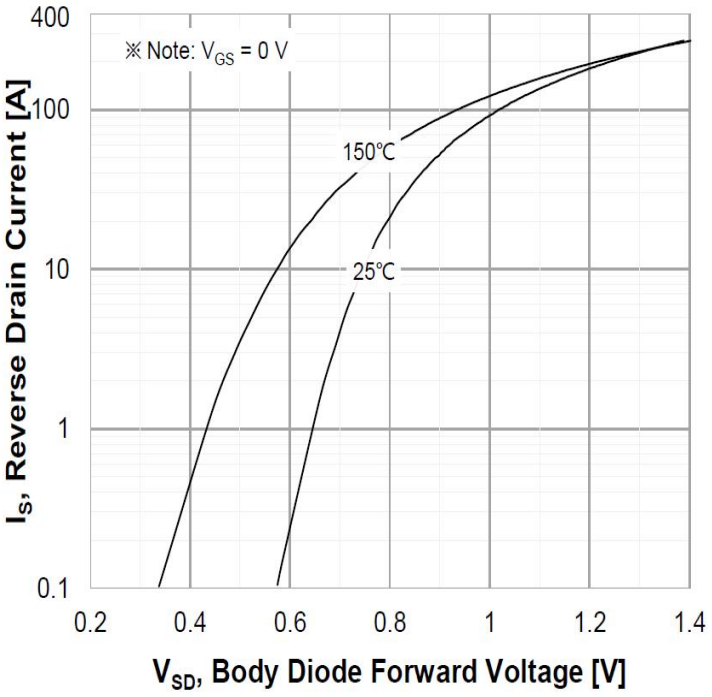
Typical Performance Characteristics

On-resistance vs temperature

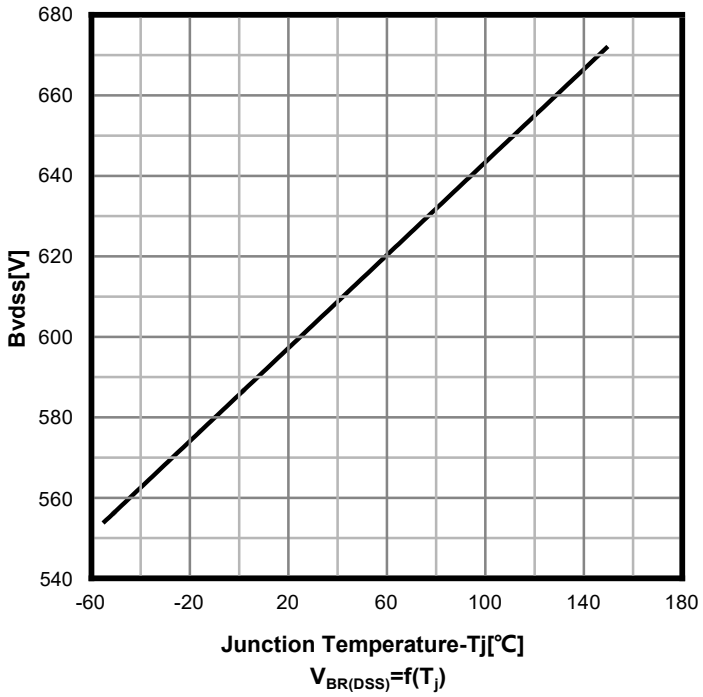


$R_{DS}(on)=f(T_j)$; I_D=37.5 A; V_{GS}=10 V

Forward characteristics of reverse diode

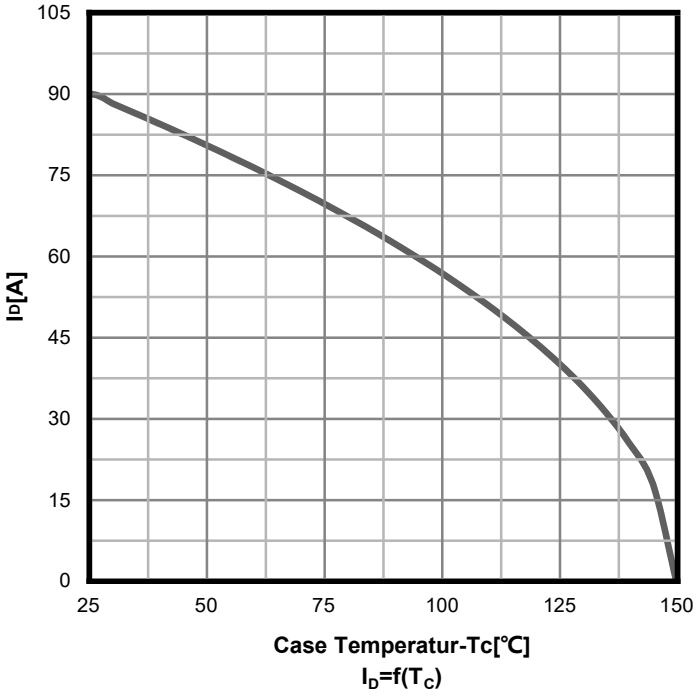


Drain-source breakdown voltage



$V_{BR(DSS)}=f(T_j)$

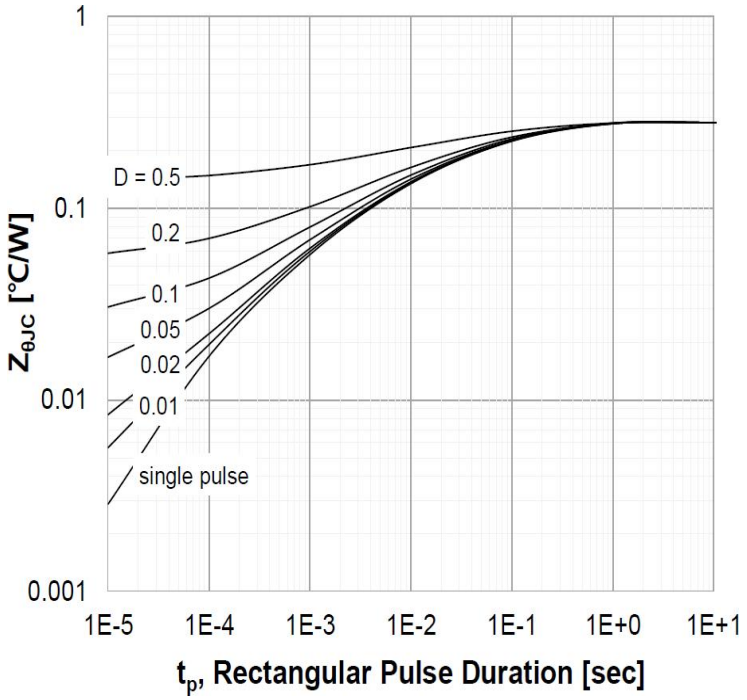
Drain current vs temperature



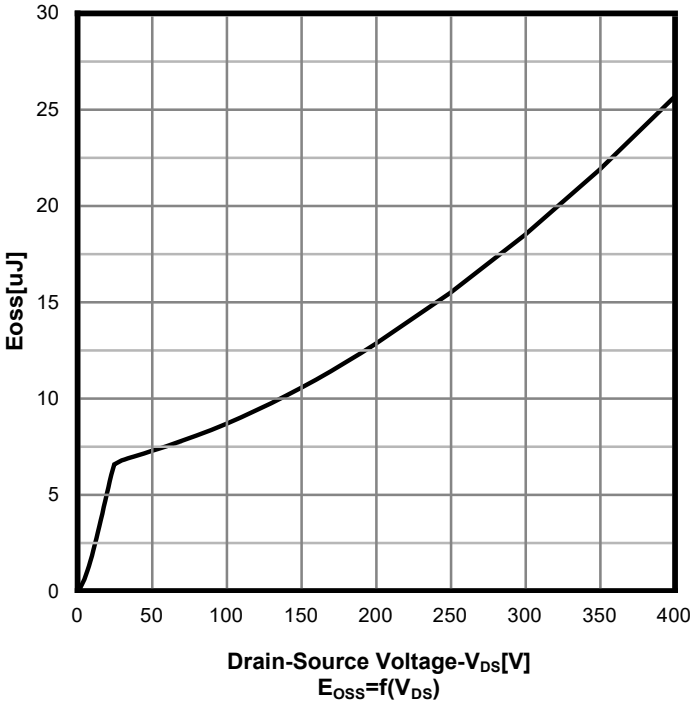
$I_D=f(T_C)$

Typical Performance Characteristics

Max. transient thermal impedance
parameter: D=tp/T



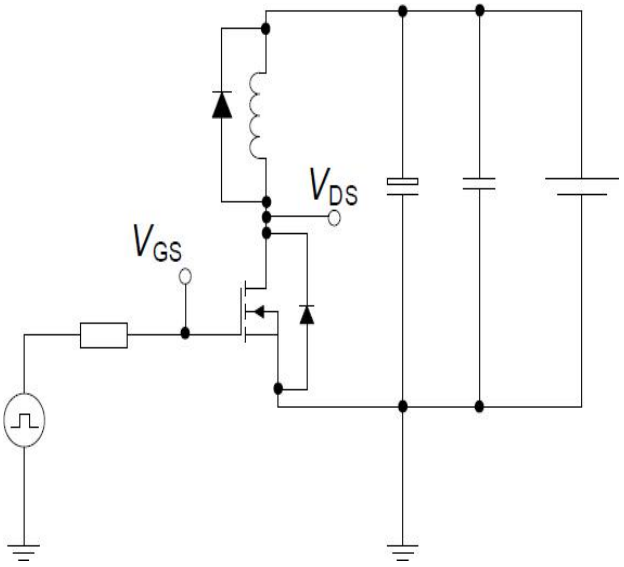
Coss stored energy



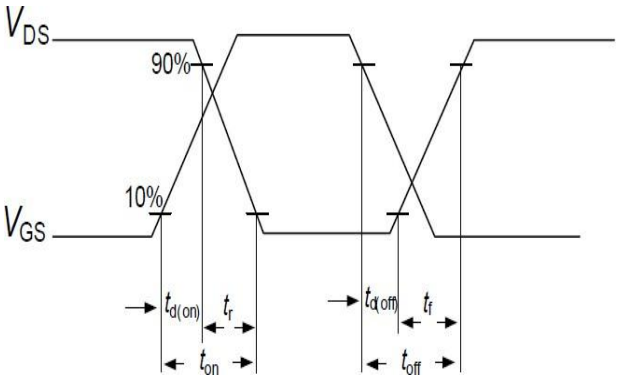
Test circuits

Switching times test circuit and waveform for inductive load

Switching times test circuit for inductive load

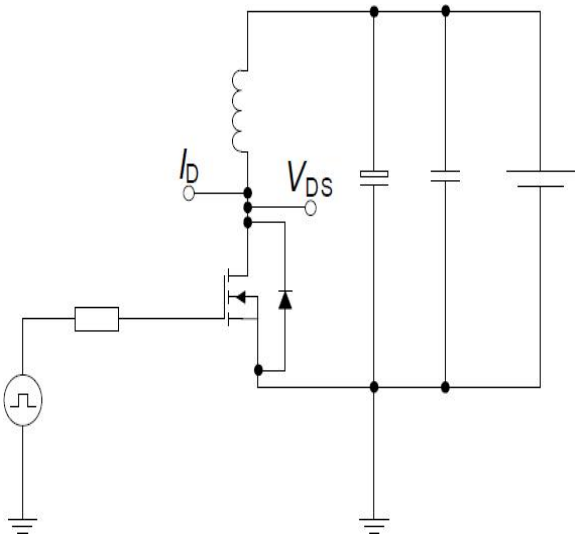


Switching time waveform

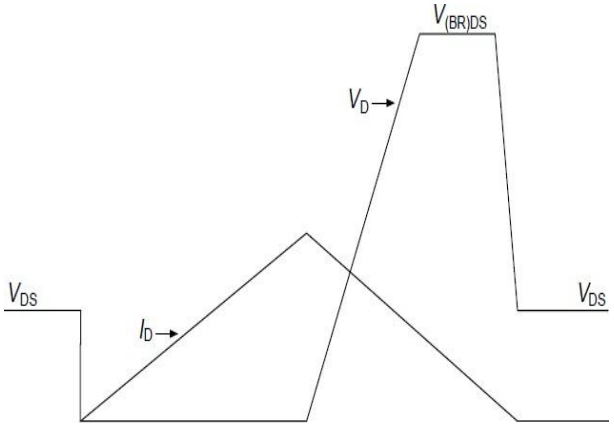


Unclamped inductive load test circuit and waveform

Unclamped inductive load test circuit



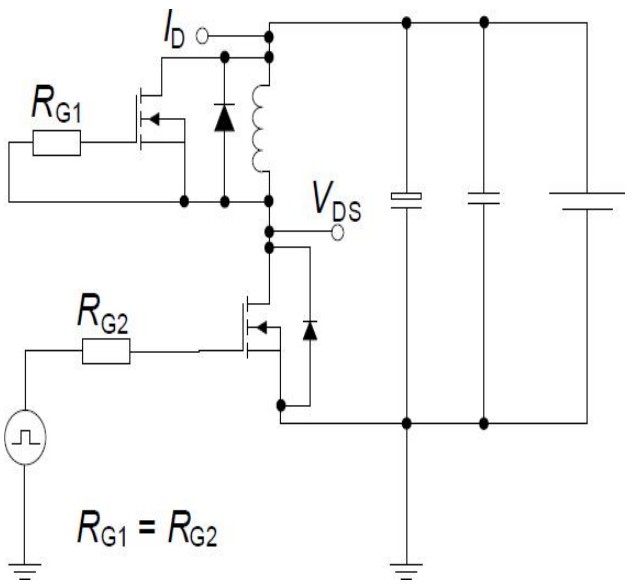
Unclamped inductive waveform



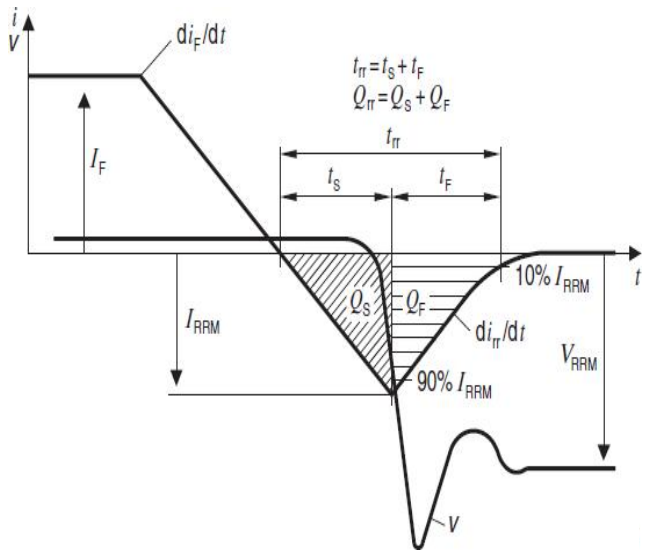
Test circuits

Test circuit and waveform for diode characteristics

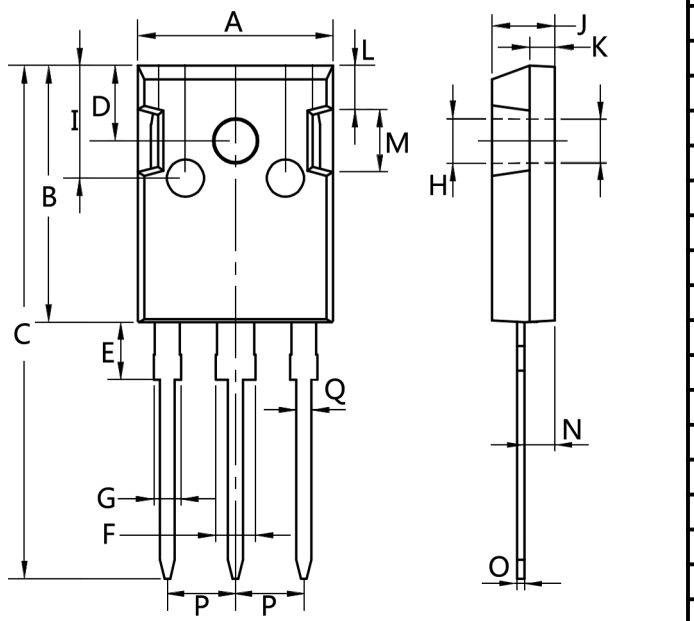
Test circuit for diode characteristics



Diode recovery waveform



TO-247 封装尺寸图



Dim.	Min.	Max.
A	15.0	16. 0
B	20.0	21.0
C	40.0	42.0
D	5.5	6.5
E	4.0	5.5
F	2.5	3.5
G	1.75	2.5
H	3.0	4.0
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.0	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.65
P	Typ 5.4	
Q	1.2	1.3
All Dimensions in millimeter		

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