

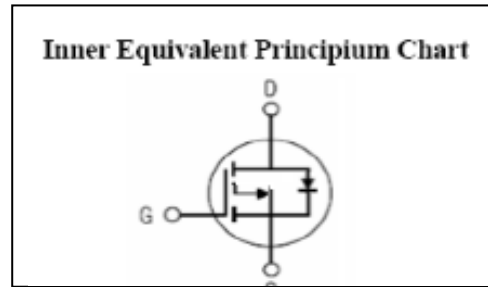
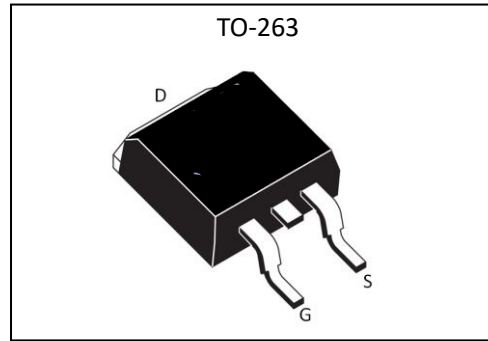
Features:

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

V_{DSS}	-60	V
I_D	-110	A
P_D	250	W
$R_{DS(ON) \text{ TYPE}}$	5.5	m Ω

Applications:

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



Absolute (Tc= 25°C unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-60	V
I_D	Continuous Drain Current	-110	A
	Continuous Drain Current $T_C = 100^\circ\text{C}$	-80	A
I_{DM}^{a1}	Pulsed Drain Current	-400	A
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt^{a3}	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	250	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	175, -55 to 175	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering	300	$^\circ\text{C}$

Electrical Characteristics (Tc= 25°C unless otherwise specified):

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V _{DSS}	Drain to Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-60	--	--	V
ΔBV _{DSS} /ΔT _J	Bvdss Temperature Coefficient	I _D =-250uA, Reference 25°C	--	0.06	--	V/°C
I _{DSS}	Drain to Source Leakage Current	V _{DS} =-60, V _{GS} = 0V, T _a =25°C	--	--	-1	μA
		V _{DS} =-48V, V _{GS} = 0V, T _a =125°C	--	--	-250	
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} = +20V	--	--	100	nA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} =-20V	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R _{DS(ON)1}	Drain-to-Source On-Resistance	V _{GS} =-10V, I _D =-50A	--	5.5	6.8	mΩ
R _{DS(ON)1}	Drain-to-Source On-Resistance	V _{GS} =-4.5V, I _D =-20A	--	7.0	8.5	mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-3.0	--	-1.0	V
Pulse width tp ≤ 380μs, δ ≤ 2%						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-50A	--	70	--	S
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-25V f=1.0MHz	--	10200	--	pF
C _{oss}	Output Capacitance		--	950	--	
C _{rss}	Reverse Transfer Capacitance		--	840	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	R _L =1.5Ω, V _{DD} =-30V V _{GS} =-10V, R _G =1.5Ω	--	50	--	ns
t _r	Rise Time		--	45	--	
t _{d(OFF)}	Turn-Off Delay Time		--	110	--	
t _f	Fall Time		--	75	--	
Q _g	Total Gate Charge	I _D =-50.0A, V _{DD} =-30V V _{GS} =-10V	--	180	--	nC
Q _{gs}	Gate to Source Charge		--	48	--	
Q _{gd}	Gate to Drain ("Miller") Charge		--	45	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	-100	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	-400	A
V_{SD}	Diode Forward Voltage	$I_S = -100A, V_{GS} = 0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_S = -100A, T_j = 25^\circ C$	--	75	--	ns
Q_{rr}	Reverse Recovery Charge	$di_F/dt = 100A/us, V_{GS} = 0V$	--	210	--	nC
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

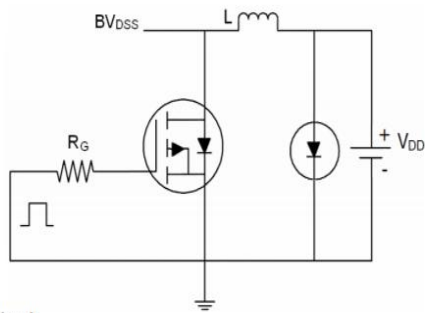
Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	1.61	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient	62.5	$^\circ C/W$

^{a1}: Repetitive rating; pulse width limited by maximum junction temperature

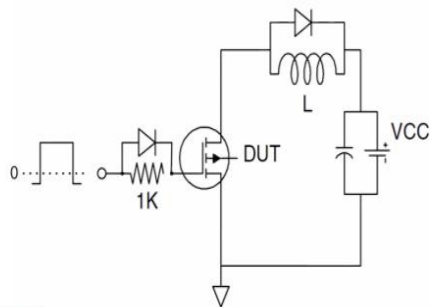
^{a3}: $I_{SD} = -100A, di/dt \leq 100A/us, V_{DD} \leq BV_{DS}, Start T_j = 25^\circ C$

Test Circuit

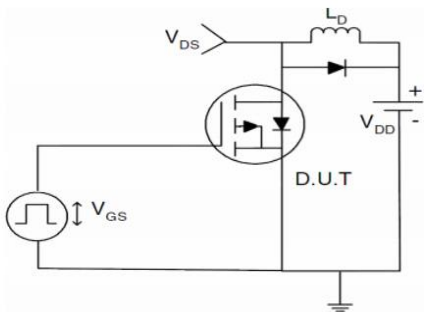
1) E_{AS} Test Circuit

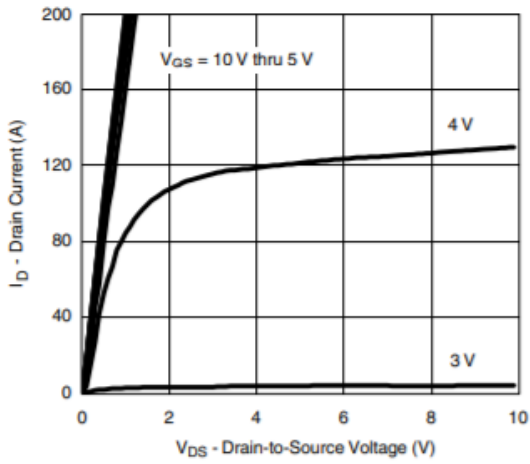


2) Gate Charge Test Circuit

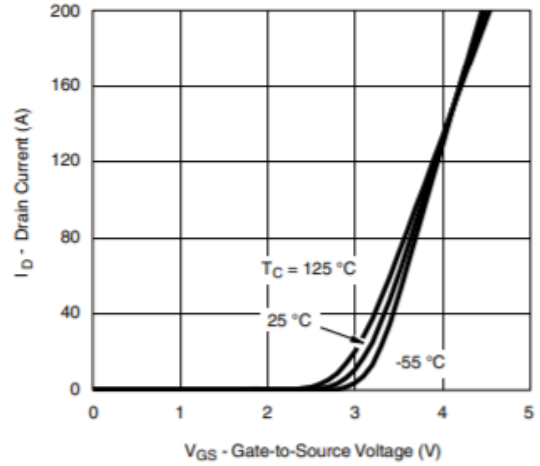


3) Switch Time Test Circuit

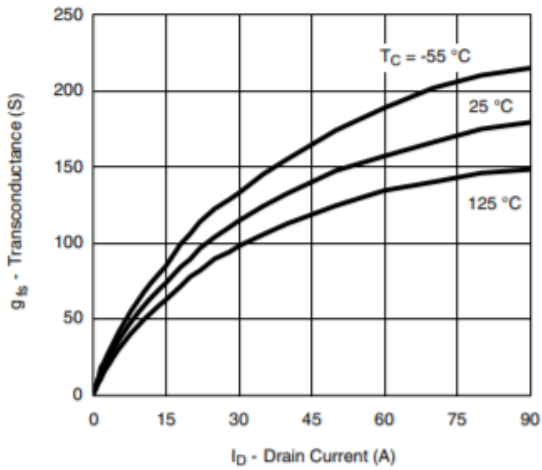




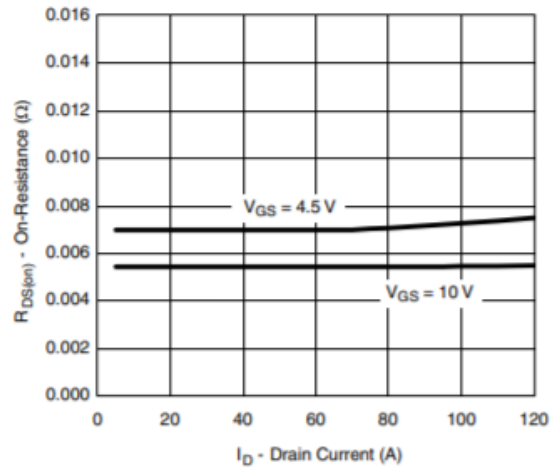
Output Characteristics



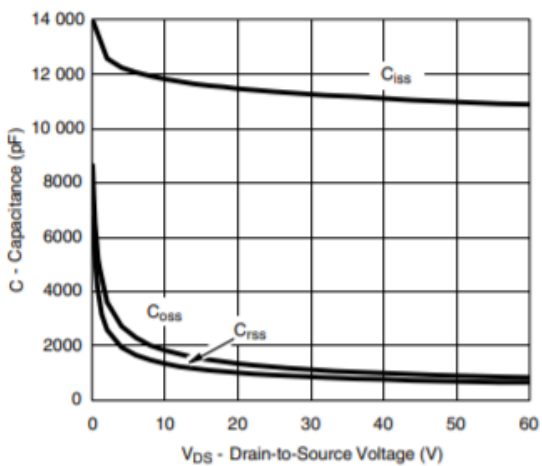
Transfer Characteristics



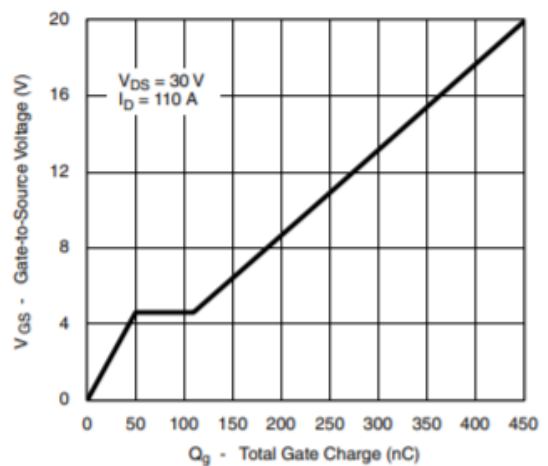
Transconductance



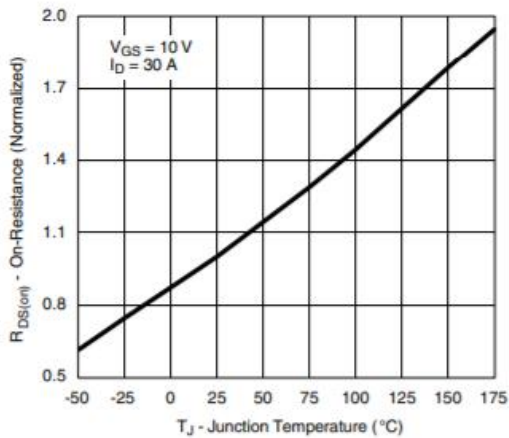
On-Resistance vs. Drain Current



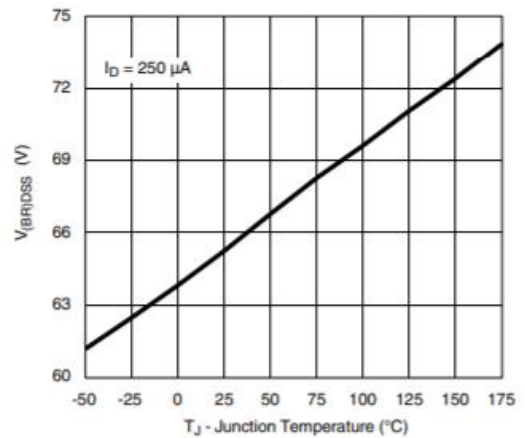
Capacitance



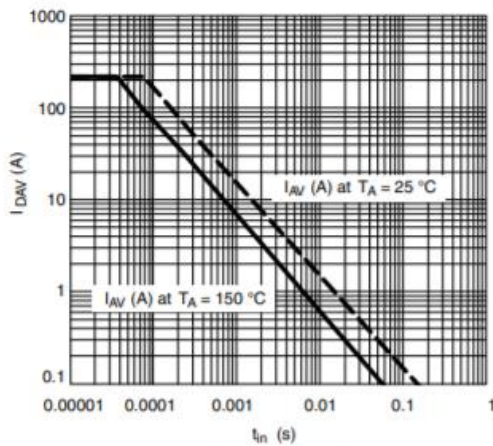
Gate Charge



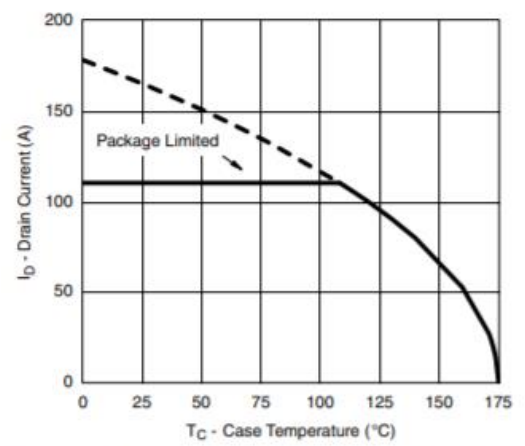
On-Resistance vs. Junction Temperature



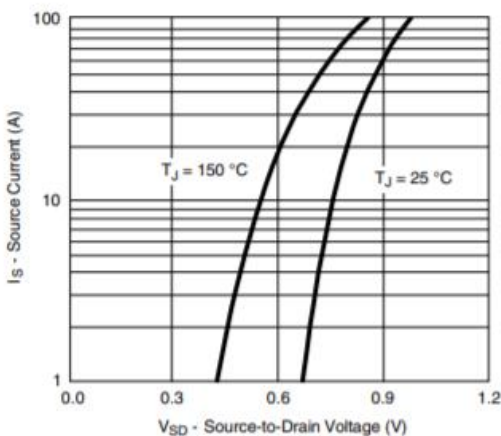
Drain Source Breakdown vs. Junction Temperature



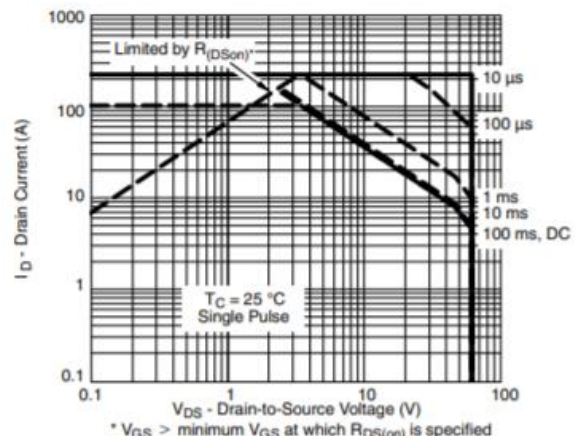
Avalanche Current vs. Time



Maximum Avalanche and Drain Current vs. Case Temperature



Source-Drain Diode Forward Voltage



Safe Operating Area