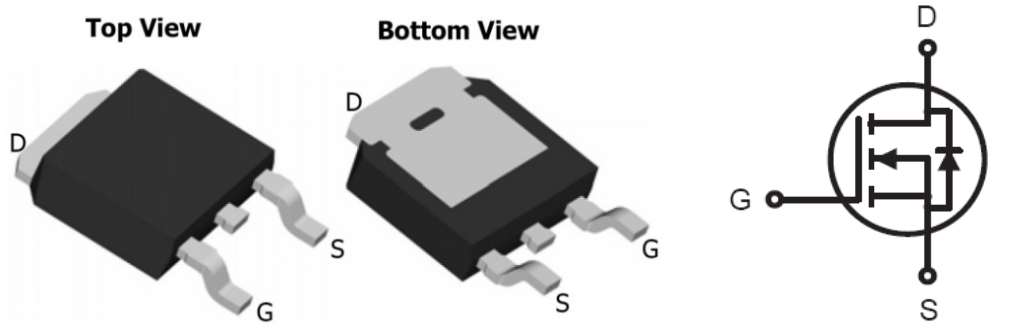
75A、30V N-CHANNEL POWER MOSFET

- **Features**

* V_{DS} = 30V
* $R_{DS(ON)}$ < 5.2mΩ@V_{GS} = 10 V
* $R_{DS(ON)}$ < 9mΩ@V_{GS} = 4.5 V
* Minimize input capacitance and gate charge
* Specially designed for DC/DC converters and DC motor control

- **Pin Configurations**



TO252

- **Absolute Maximum Ratings** @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Units
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current	T_A=25℃	I_D	85	A
	T_A=100℃		70	
Drain Current Pulsed (Note 1)		I_{DM}	200	A
Total Power Dissipation (T_C = 25℃)		P_D	130	W
Derating Factor above 25℃			0.9	W/℃
Operation Junction Temperature		T_J	-55 ~ +150	℃
Storage Temperature		T_{STG}	-55 ~ +150	℃

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

- **THERMAL DATA**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Thermal Resistance, Junction-to-Case	θ_{JC}			1.15	°C/W
Thermal Resistance, Case-to-Sink	θ_{CS}		0.5		
Thermal Resistance, Junction-to-Ambient	θ_{JA}			62.5	

- **Electrical Characteristics @T_A=25℃ unless otherwise noted**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} =0V,I_D=250u A	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} I_D=250uA	1		3	
I_{GSS}	Gate-Body Leakage	V_{DS} =0V, V_{GS} =±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =30V, V_{GS} = 0V			1	uA
$R_{DS(ON)}$	Drain-Source On-Resistance [a]	V_{GS} = 10V, I_D = 20A		4	5.2	mΩ
		V_{GS} = 4.5V, I_D =20A		6.5	9	
V_{SD}	Diode Forward Voltage	I_{SD} =25A, V_{GS} = 0V			1.5	V
DYNAMIC PARAMETERS						
Q_g	Total Gate Charge	V_{DS}= 15V, V_{GS}= 10V, I_D= 20A		54		nC
Q_g	Total Gate Charge	V_{DS}= 15V, V_{GS}= 4.5V, I_D= 20A,(Note 4,5)		28		
Q_{gs}	Gate Source Charge			11		
Q_{gd}	Gate-Drain Charge			15		
Rg	Gate Resistance	f=1MHz		1		Ω
Ciss	Input capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		2450		pF
Coss	Output Capacitance			360		
Crss	Reverse Transfer Capacitance			115		
$t_{d(on)}$	Turn-On Delay Time	V_{GS}=10V , V_{DD} = 15V, RL=15 Ω, R_G = 3Ω (Note 4, 5)		22		nS
t_r	Turn-On Rise Time			19		
$t_{d(off)}$	Turn-Off Delay Time			71		
t_f	Turn-Off Fall Time			9		

Note 1. Repeativity rating: pulse width limited by junction temperature

2. L=5.6mH, I_{AS}=50A, V_{DD}=25V, R_G=0Ω, Starting T_J=25℃

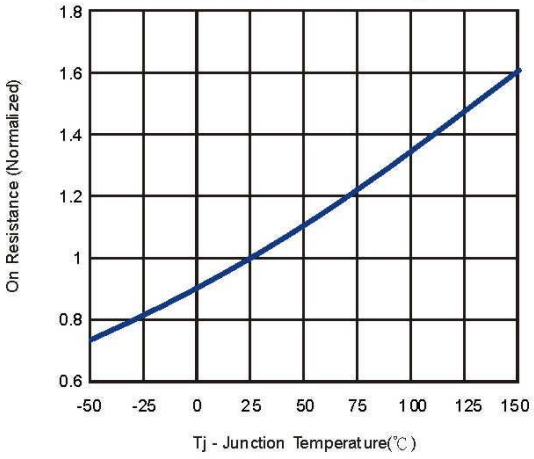
3. I_{SD}≤50A, di/dt≤300A/μs, V_{DD}≤BV_{DSS}, Starting T_J=25℃

4. Pulse Test: Pulse Width≤300μs,Duty Cycle≤2%

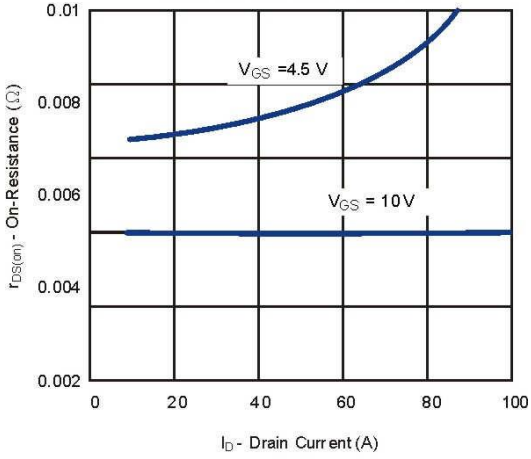
5. Essentially independent of operating temperature.

- **Typical Performance Characteristics (TJ =25 Noted)**

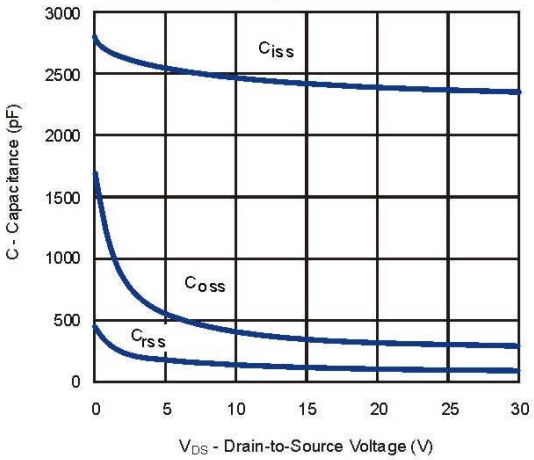
On Resistance vs. Junction Temperature



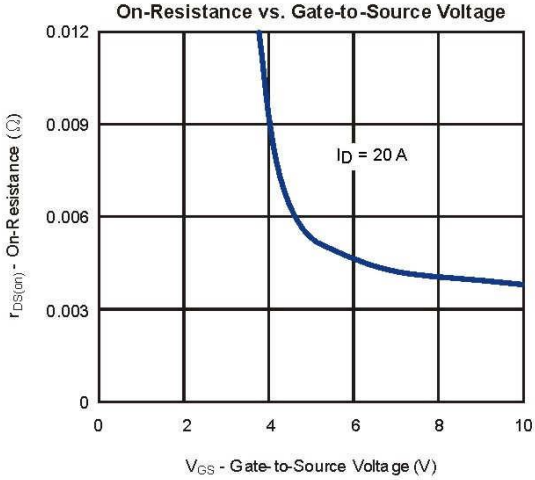
On-Resistance vs. Drain Current



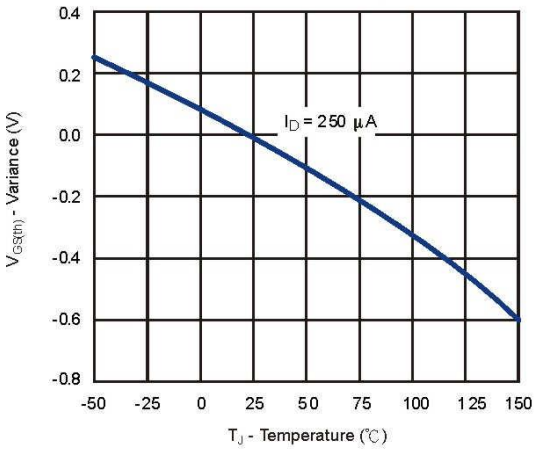
Capacitance



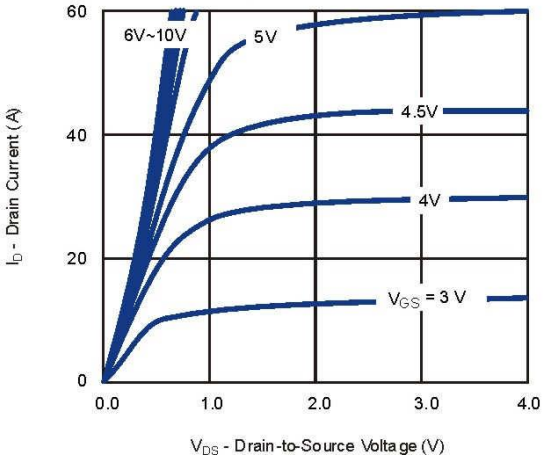
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

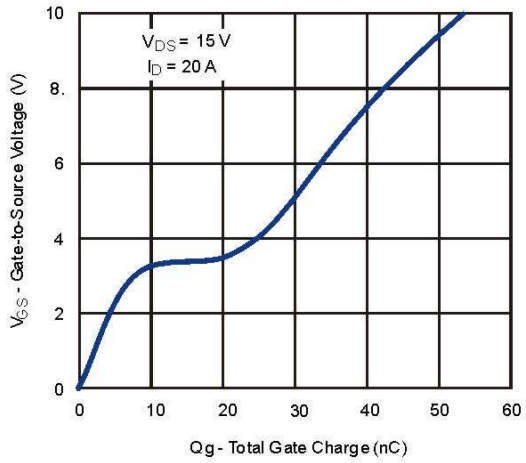


On-Region Characteristics

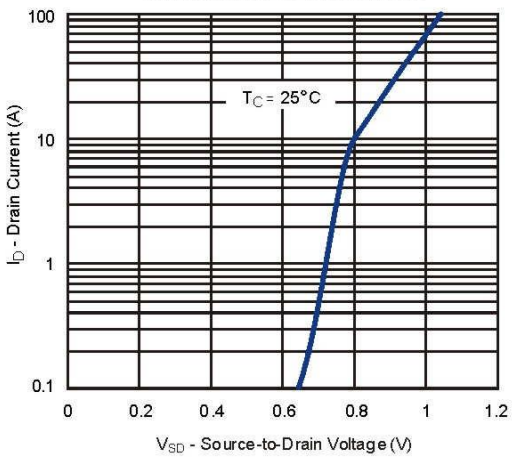


- **Typical Performance Characteristics (TJ =25 Noted)**

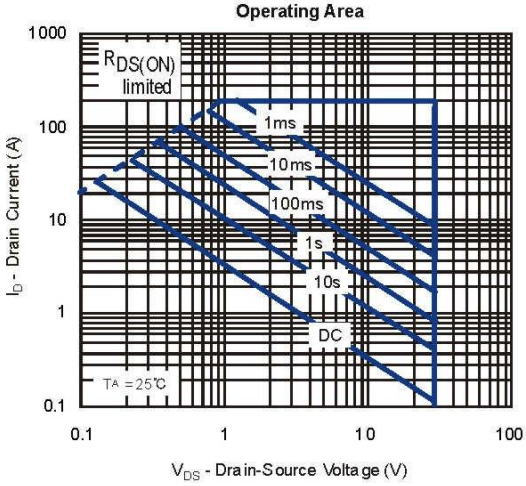
Gate Charge



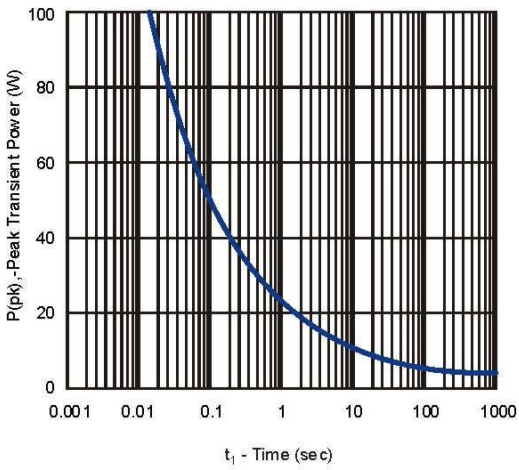
On-Resistance vs. Drain Current



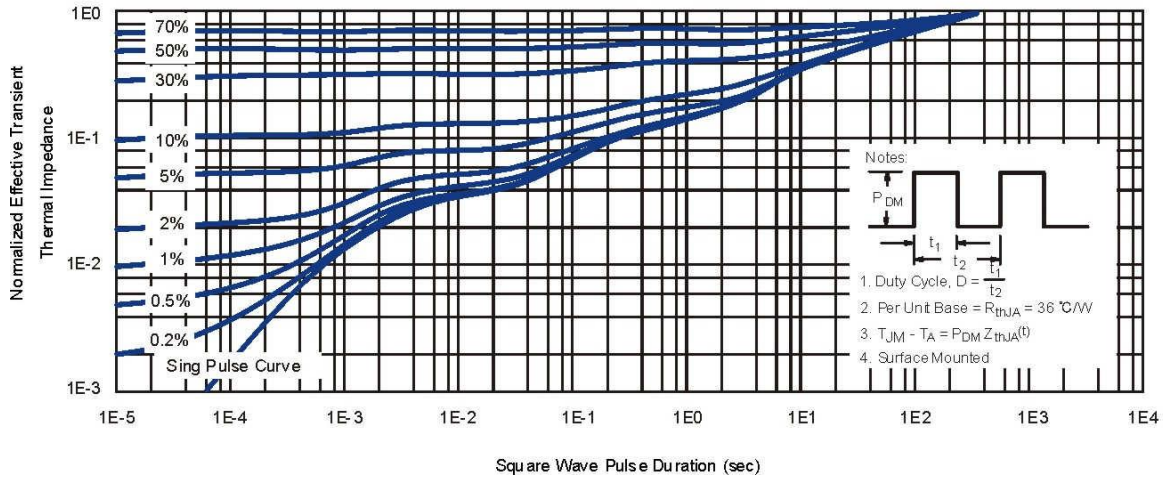
Maximum Forward Biased Safe Operating Area



Single Pulse Maximum Power Dissipation

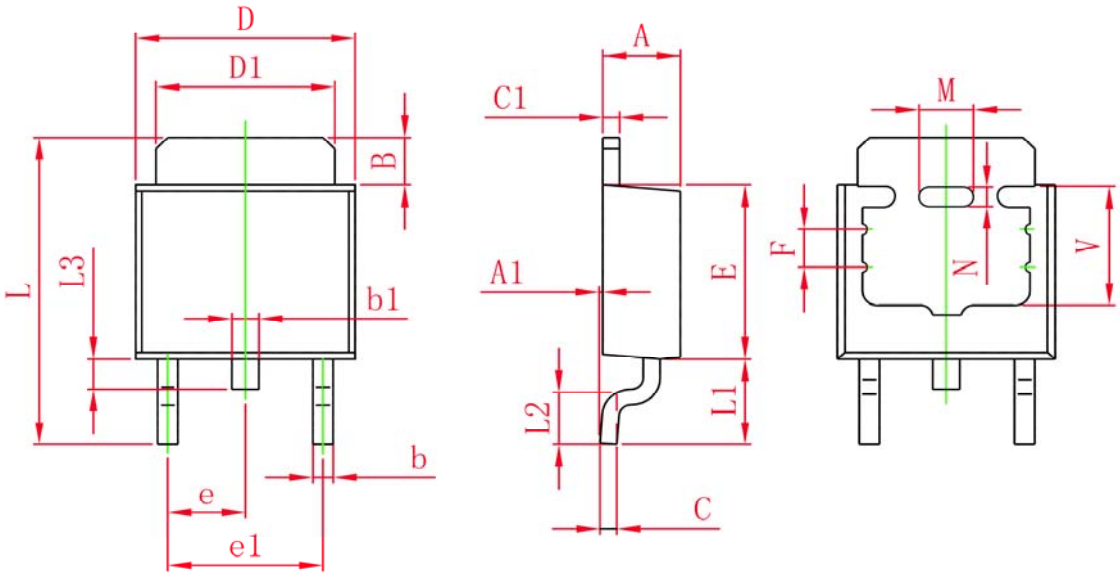


Normalized Thermal Transient Impedance, Junction-to-Ambient



- **Package Information**

TO-252C-2L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
F	1.200REF.		0.047REF.	
M	1.600REF.		0.063REF.	
N	0.450REF.		0.018REF.	
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	3.800 REF.		0.150 REF.	