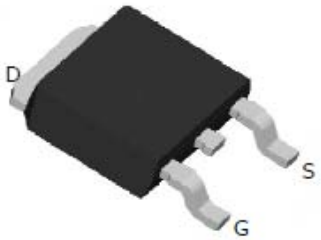
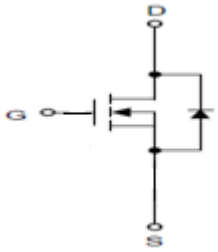
60N03D
30V N-Channel MOSFET

■ FEATURES

- 30V/60A
  RDS(ON)= 9mΩ **typ**@ VGS=10V
  RDS(ON)= 11.5mΩ **typ**@ VGS=4.5V
- Lead free and Green Device Available

■ PIN DESCRIPTION





■ Application

- Load Switch

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter		Maximum	Unit
V_{DSS}	Drain-to-Source Voltage		30	V
V_{GSS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25°C	60	A
		T_C=100°C	37	A
I_{DP}	Pulsed Drain Current	T_C=25°C	35	A
PD	Maximum Power Dissipation	T_C=25°C	54	W
		T_C=100°C	21	
T_J, T_{STG}	Junction & Storage Temperature Range		-55~150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
Rθjc	Thermal Resistance-Junction to Case	2.3	°C/W
Rθja	Thermal Resistance-Junction to Ambient	62.5	

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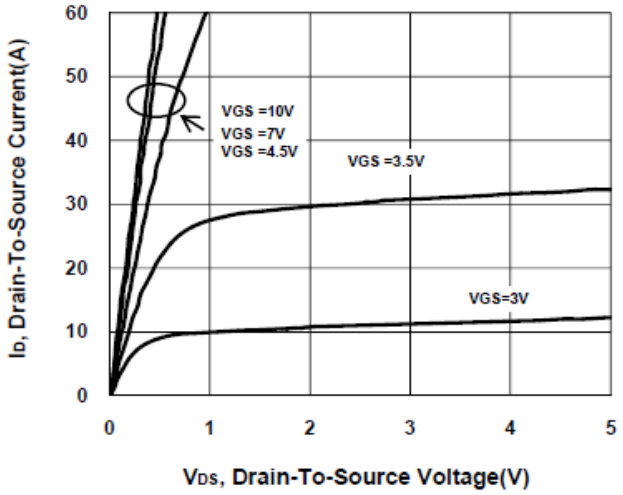
Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	30	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V,V_{GS}=0V	—	—	1	uA
		T_J=85°C	—	—	10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1	1.7	3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	—	—	±100	nA
$R_{DS(on)}$[1]	Drain-Source On-Resistance	V_{GS}=10V, I_D=15A		8.5	10	mΩ
		V_{GS}=4.5V, I_D=15A	—	12	15	
Diode Characteristics						
V_{SD}[1]	Diode Forward Voltage	I_{SD}=15A,V_{GS}=0V	—	0.88	1.3	V
I_S	Diode Continuous Forward Current				60	A
t_{rr}	Reverse Recovery Time	I_F=15A, dI/dt=100A/us	—	23		ns
Q_{rr}	Reverse Recovery Charge		—	15		nC
Dynamic Characteristics[2]						
R_G	Gate Resistance	V_{GS}=0V, V_{DS}=0V, Frequency=1MHz	—	1.5	—	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V Frequency=1MHz	—	920		pF
C_{oss}	Output Capacitance		—	187		
C_{rss}	Reverse Transfer Capacitance		—	130		
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V, R_L=30Ω I_D=15A, V_{GS}=10V R_G=6Ω	—	15		ns
t_r	Turn-On Rise Time		—	25		
$t_{d(off)}$	Turn-Off Delay Time		—	60		
t_f	Turn-Off Fall Time		—	17		
Gate Charge Characteristics[2]						
Q_g	Total Gate Charge	V_{DS}=15V,V_{GS}=10V I_D=15A	—	22		nC
Q_{gs}	Gate-to-Source Charge		—	5		
Q_{gd}	Gate-to-Drain Charge		—	6.5		

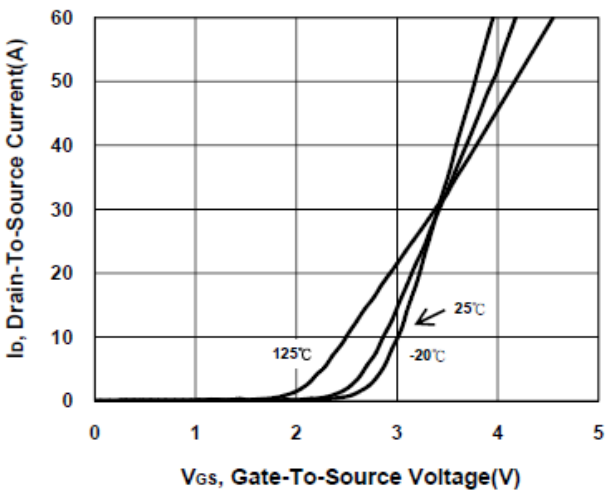
Note: 1: Pulse test; pulse width ≦ 300ns, duty cycle ≦ 2%.
2: Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

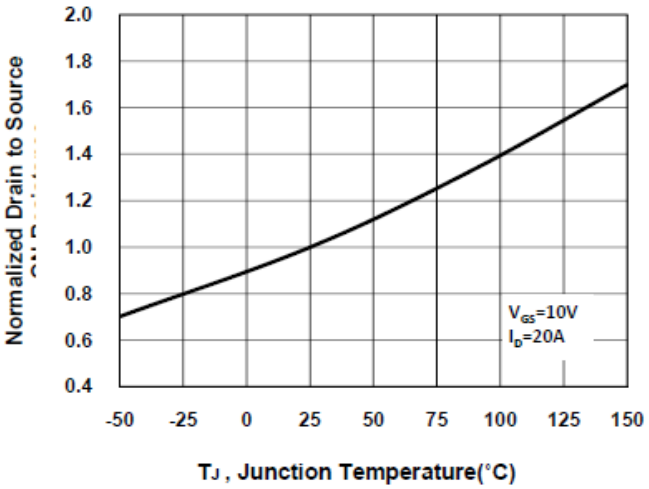
Output Characteristics



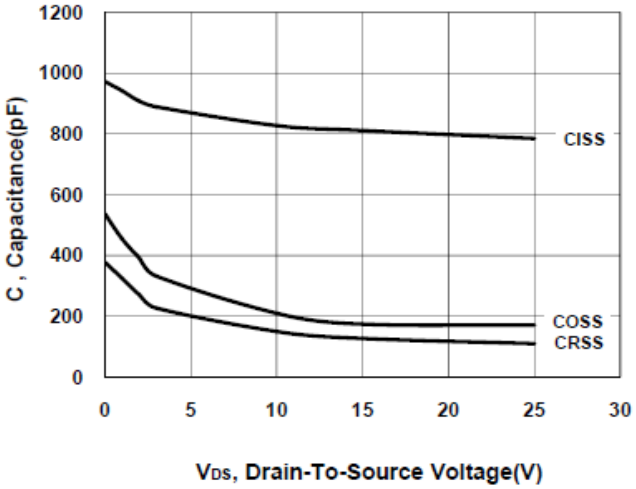
Transfer Characteristics



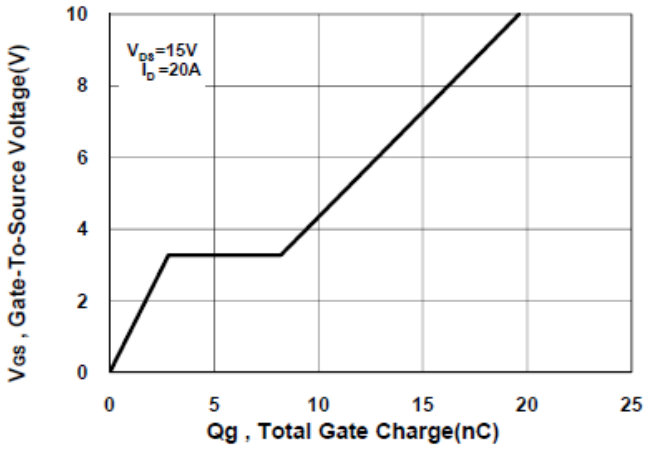
On-Resistance VS Temperature



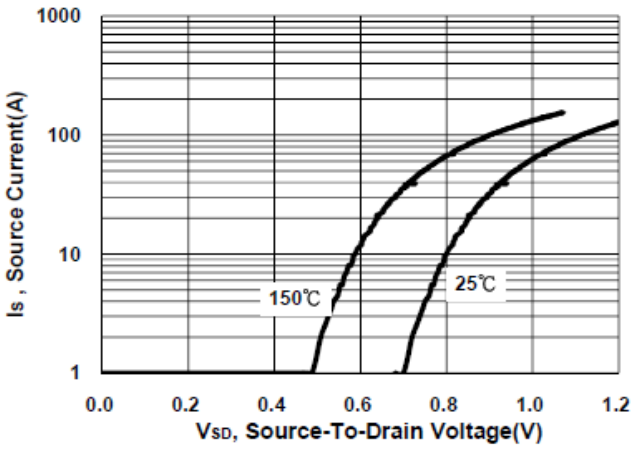
Capacitance Characteristic



Gate charge Characteristics

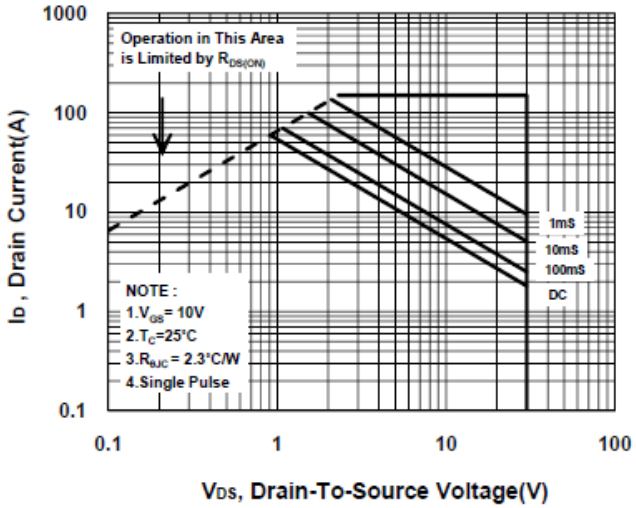


Source-Drain Diode Forward Voltage

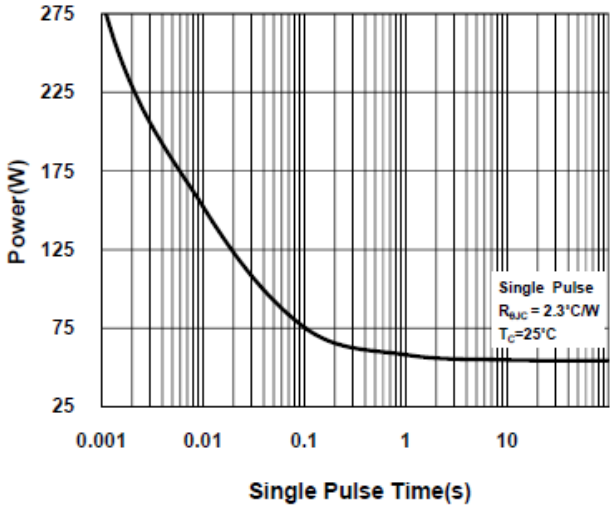


Typical Operating Characteristics

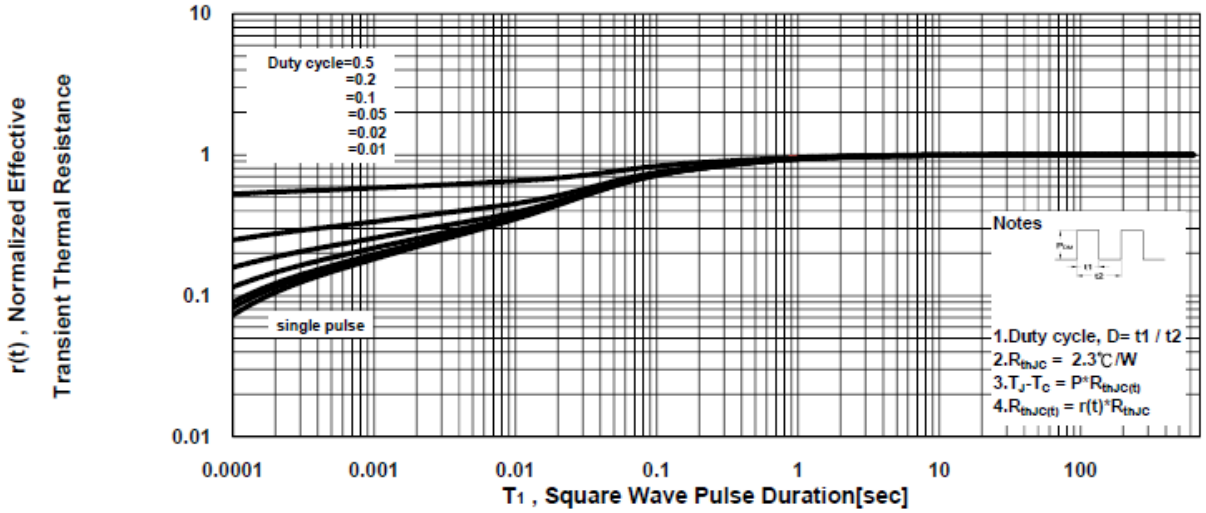
Safe Operating Area



Single Pulse Maximum Power Dissipation

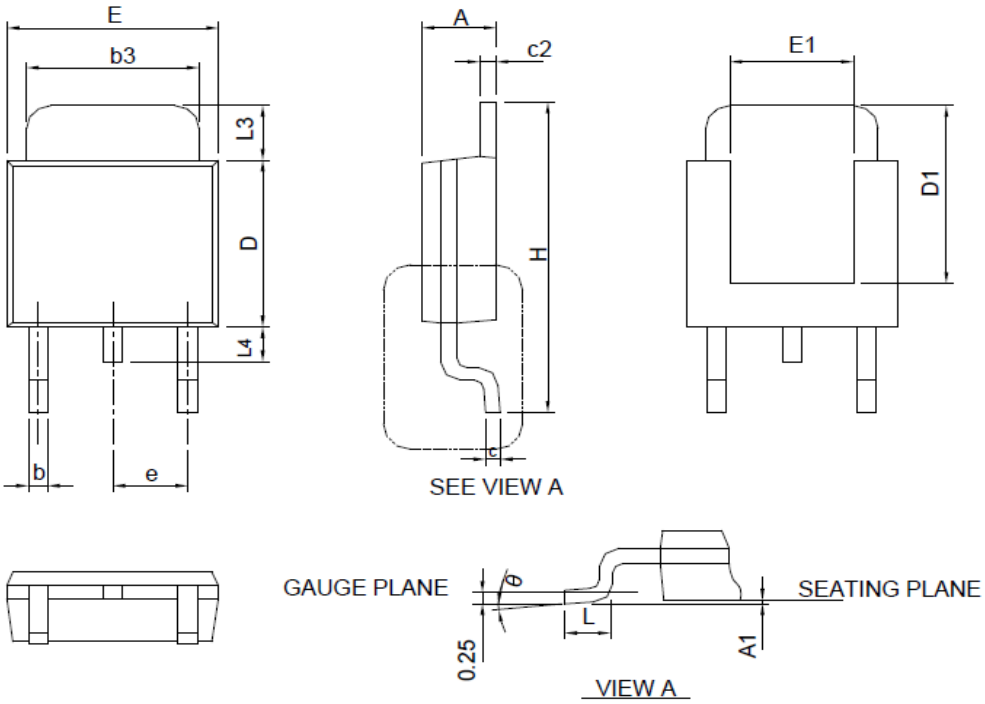


Transient Thermal Response Curve



Package Information

TO-252-3



SYMBOL	TO-252-3			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.39	0.086	0.094
A1		0.13		0.005
b	0.50	0.89	0.020	0.035
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.89	0.018	0.035
D	5.33	6.22	0.210	0.245
D1	4.57	6.00	0.180	0.236
E	6.35	6.73	0.250	0.265
E1	3.81	6.00	0.150	0.236
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	0.90	1.78	0.035	0.070
L3	0.89	2.03	0.035	0.080
L4		1.02		0.040
θ	0°	8°	0°	8°

Note : Follow JEDEC TO-252 .