Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	2.8mΩ@10V	140A
	3.2mΩ@4.5V	

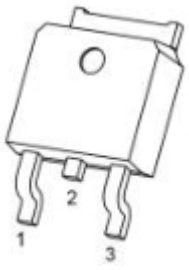
Feature

- Trench Power Technology
- Low RDS(ON)
- Low Gate Charge
- Optimized for Fast-switching Applications

Applications

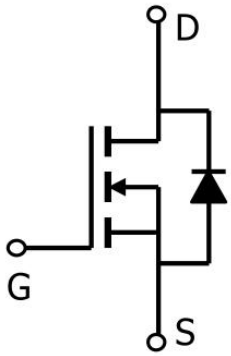
- High Speed Power Switching
- DC/DC Converters

Package



TO-252 (G:1 D:2 S:3)

Circuit diagram



Marking

60N02BG : Product code
** : Week code.

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃, Silicon limited)	I_D	240	A
Continuous Drain Current (T_C=25℃, Package limited)	I_D	140	A
Pulsed Drain Current	I_{DM}	560	A
Single Pulse Avalanche Energy	E_{AS}	243	mJ
Power Dissipation (T_C=25℃)	P_D	125	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1	℃/ W
Operating Junction and Storage Temperature Range	$T_{J,}, T_{STG}$	-55~ +150	℃

Electrical characteristics

(T_A=25℃, unless otherwise noted)

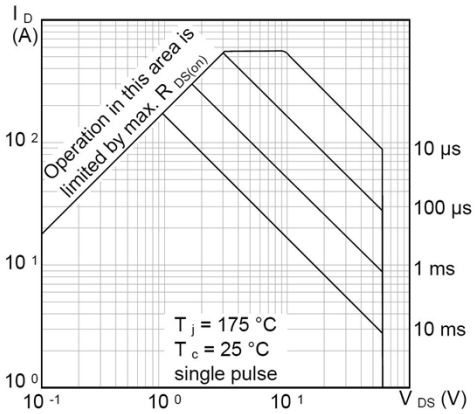
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =48V,V_{GS} = 0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±20V			±100	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.7	2.2	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =40A		2.8	3.5	mΩ
		V_{GS} =4.5V, I_D =40A		3.2	4.3	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz		3910		pF
Output Capacitance	C_{oss}			1300		
Reverse Transfer Capacitance	C_{rss}			11		
Total Gate Charge	Q_g	V_{DD}=30V, I_D =40A , V_{GS}=10V		53		pF
Gate-Source Charge	Q_{gs}			17		
Gate-Drain Charge	Q_{gd}			10		
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=30V, V_{GS}=10V, I_D =40A, R_G =4Ω		15		nS
Turn-on Rise Time	T_r			34		
Turn-off Delay Time	$T_{d(off)}$			33		
Turn-off Fall Time	T_f			9		
Diode Characteristics						
Body Diode Voltage	V_{SD}	V_{GS}=0V , I_S=40A			1.2	V
Reverse Recovery Time	t_{rr}	I_F =40A, diF/dt = 100A/μs		48		ns
Reverse Recovery Charge	Q_{rr}			99		nC

Note :

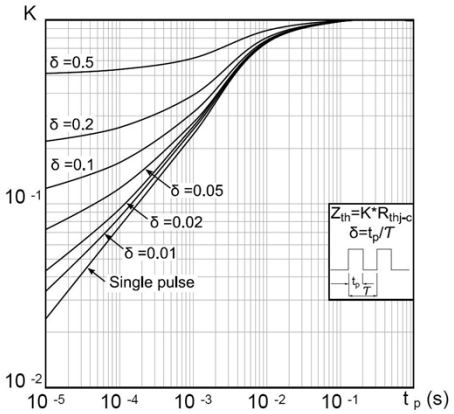
1. EAS condition: V_{DD} = 30V, V_G=10V,L=0.3mH,Rg=25Ω, T_J = 25°C.

Typical Characteristics

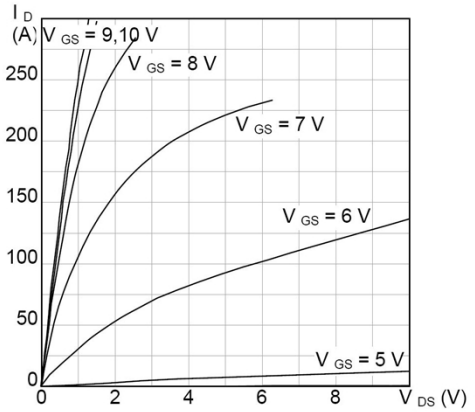
Safe operating area



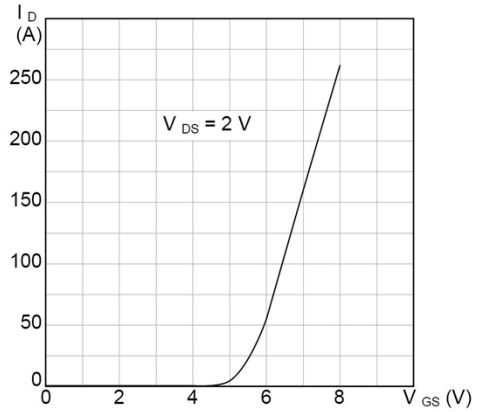
Thermal impedance



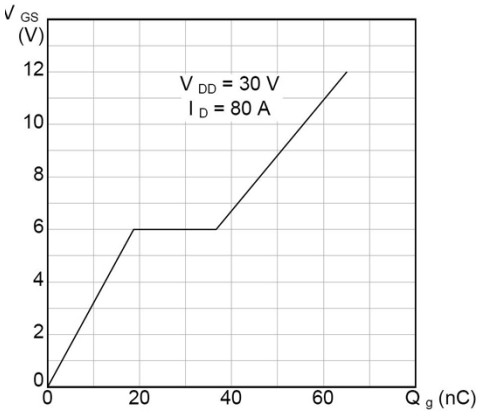
Output characteristics



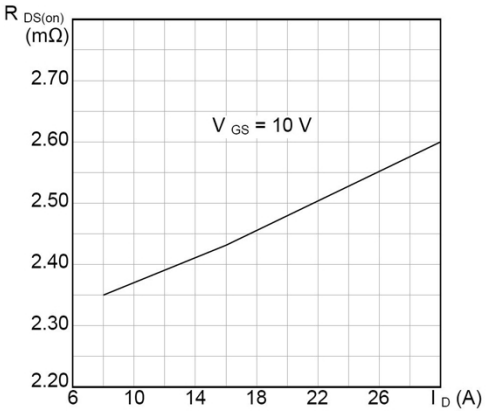
Transfer characteristics



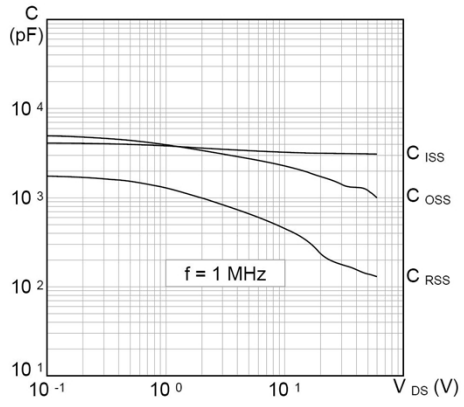
Gate charge vs gate-source voltage



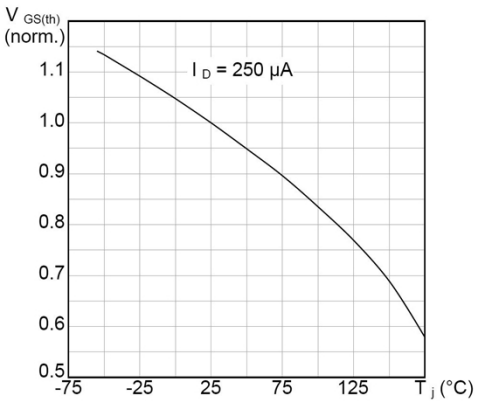
Static drain-source on-resistance



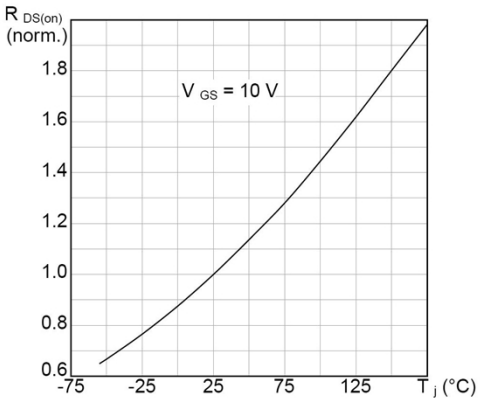
Capacitance variations



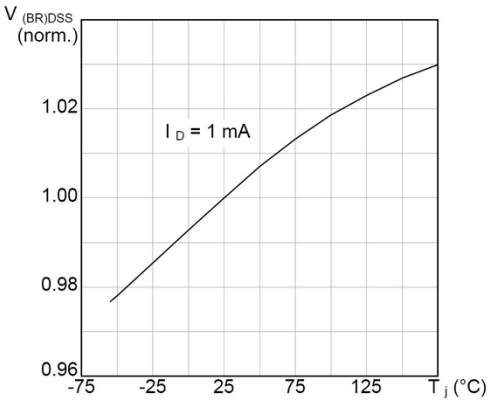
Normalized gate threshold voltage vs temperature



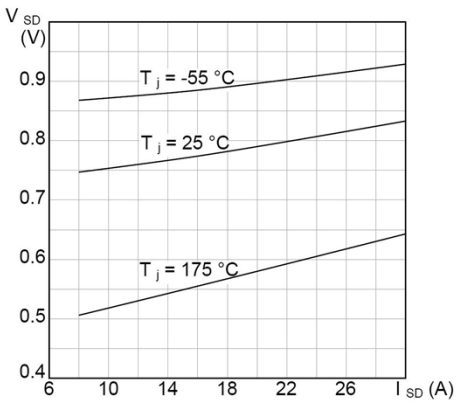
Normalized on-resistance vs temperature



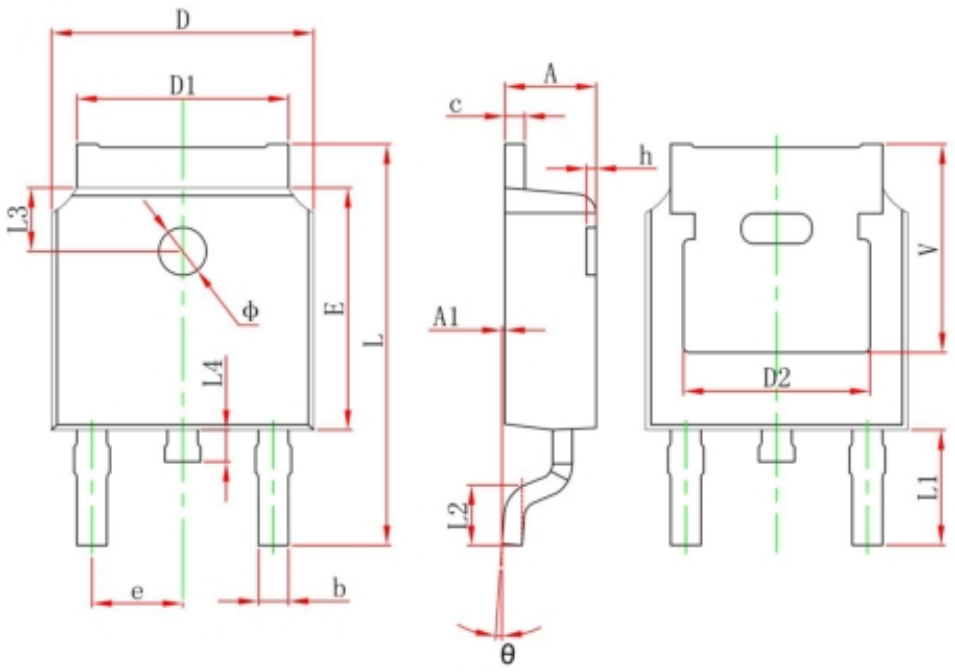
Normalized $V_{(BR)DSS}$ vs temperature



Source-drain diode forward characteristics



TO-252 Package Information



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	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	