60V N-Channel Power MOSFET

DESCRIPTION：
- Reliable and Rugged
- Fast switching speed
- 100% UIS Tested, 100%Rg Tested
- Pb-Free Lead Plating
- RoHS compliant

V_{DSS}	60V
I_D	153A
$R_{DS(ON)\_Max}$	3.9mΩ

TYPICAL APPLICATIONS：
- DC/DC converter

TO-247AB

MAXIMUM RATINGS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Pulsed Drain Current (1)	Tc=25℃	I_{DM}	382	A
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	153 97	A
Single Pulsed Avalanche Energy (2)	L=0.1mH L=0.5mH	E_{AS}	140 210	mJ
Maximum Power dissipation	Tc=25℃ Tc=100℃	P_D	125 50	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. Max. current is limited by junction temperature
2. UIS tested and pulse width are limited by maximum junction temperature 150°C

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction – Ambient Junction - Case	$R_{\theta(j-A)}$ $R_{\theta(j-C)}$	62.5 1.0	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	BV_{DSS}	60			V
Zero Gate Voltage Drain Current VDS = 48 V, VGS = 0 V Tj=25℃	I_{DSS}			1	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	2	3	4	V
Drain-Source On-State Resistance VGS = 10V, ID = 20A	$R_{DS(on)}$		3.2	3.9	mΩ
Input capacitance f=1MHz, VDS=30 V, VGS=0 V	C_{iss}		5610		pF
Output capacitance f=1MHz, VDS=30 V, VGS=0 V	C_{oss}		1188		pF
Reverse transfer capacitance f=1MHz, VDS=30 V, VGS=0 V	C_{rss}		100		pF
Gate Resistance f=1MHz, VDS=0 V, VGS=0 V	R_g		0.7		Ω
Total Gate Charge VDS= 30V, ID= 20A,VGS= 10V	Q_G		83.5		nC
Gate to Source Charge VDS= 30V, ID= 20A,VGS= 10V	Q_{GS}		29.4		nC
Gate to Drain Charge VDS= 30V, ID= 20A,VGS= 10V	Q_{GD}		13.5		nC
Turn-on delay time VDD=40 V, VGS= 10V, ID= 30A, R_{GEN}=3Ω	td (ON)		26.4		ns
Turn-on Rise time VDD=40 V, VGS= 10V, ID= 30A, R_{GEN}=3Ω	tr		7.7		ns
Turn-off delay time VDD=40 V, VGS= 10V, ID= 30A, R_{GEN}=3Ω	td (OFF)		59		ns
Turn-off Fall time VDD=40 V, VGS= 10V, ID= 30A, R_{GEN}=3Ω	tf		91.7		ns

Body Diode

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage VGS = 0V, I_S = 10A	V_{SD}		0.75	1.1	V
Maximum Continuous Body Diode Forward Current	I_S			43	A
Revers Recovery Time IF=10A, VR=40V, dIF/dt = 100A/us□	Trr		52		ns
Revers Recovery Charge IF=10A, VR=40V, dIF/dt = 100A/us	Qrr		65		nC

Typical Characteristics

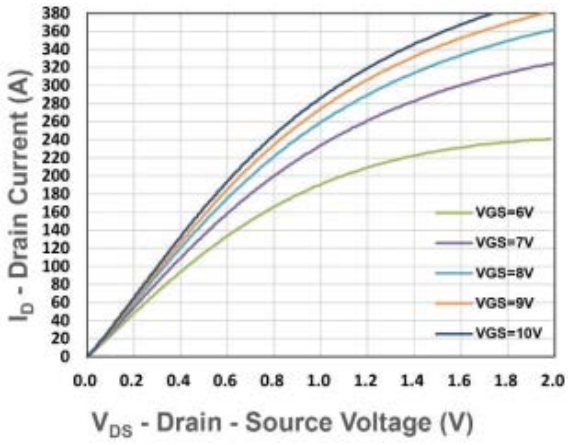


Figure 1. Output Characteristics

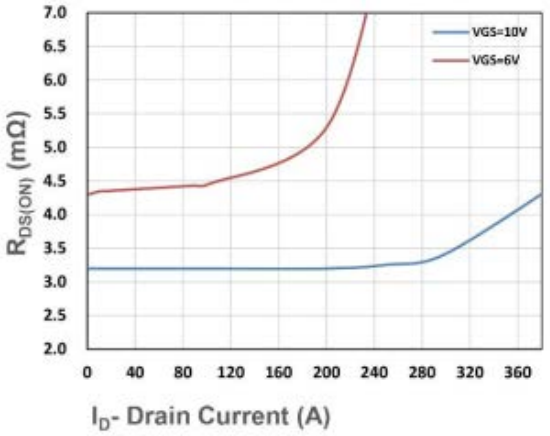


Figure 2. On Resistance vs. ID

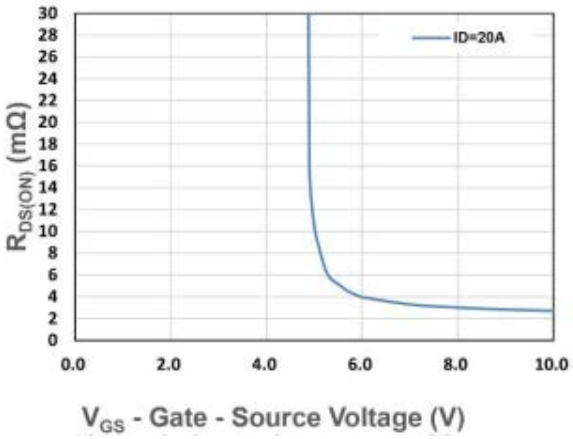


Figure 3. On Resistance vs. VGS

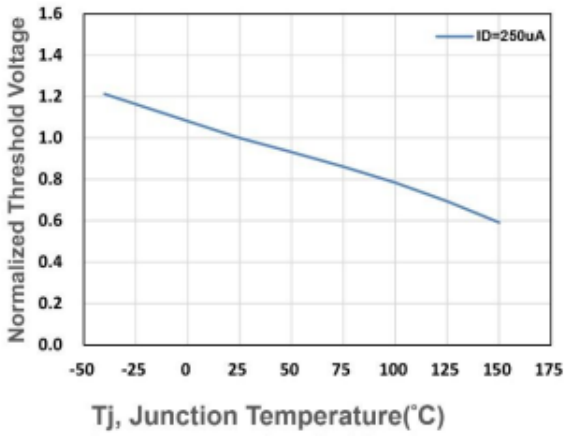


Figure 4. Gate Threshold Characteristics

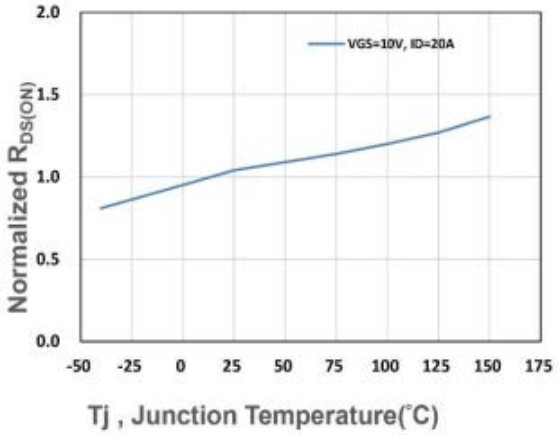


Figure 5. On-resistance vs. Drain-Source

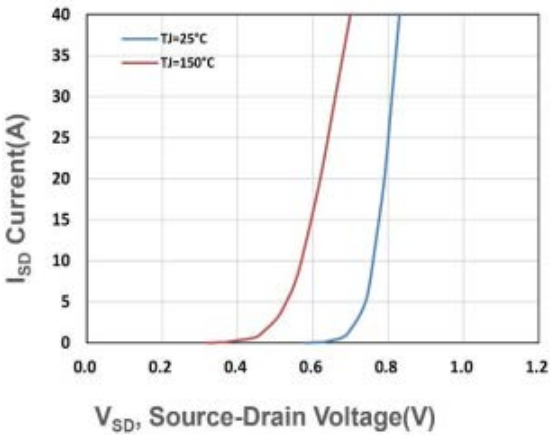


Figure 6. Drain-Source Diode Forward

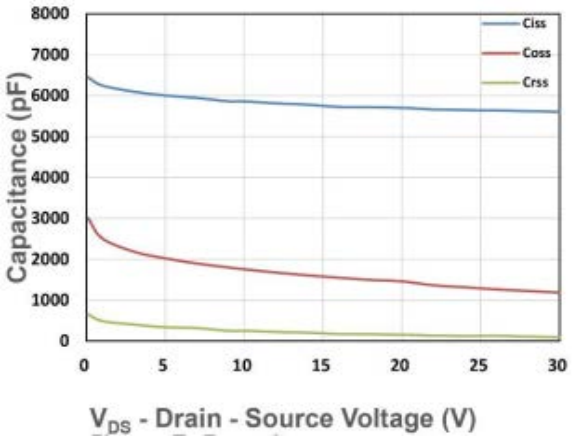


Figure 7. Capacitance Characteristics

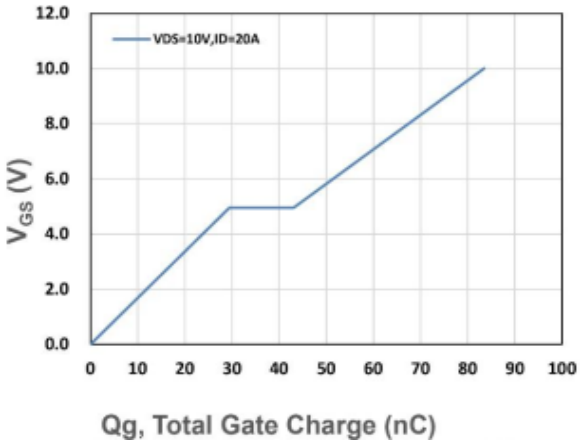


Figure 8. Gate Charge Characteristics

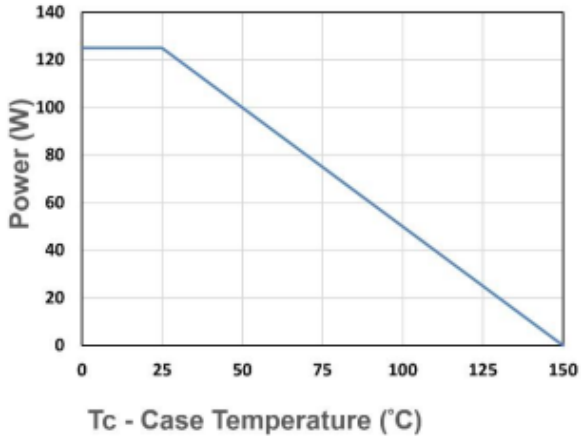


Figure 9. Power Dissipation

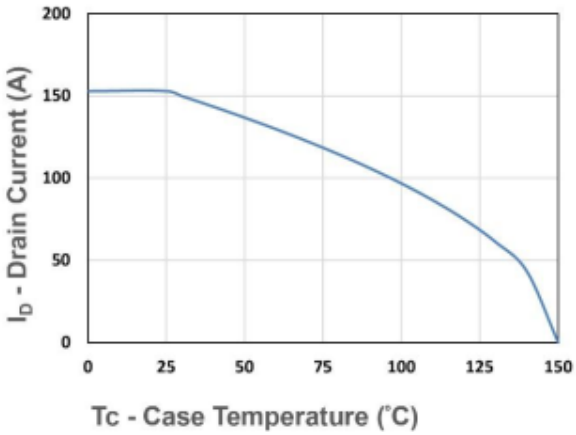


Figure 10. Drain Current

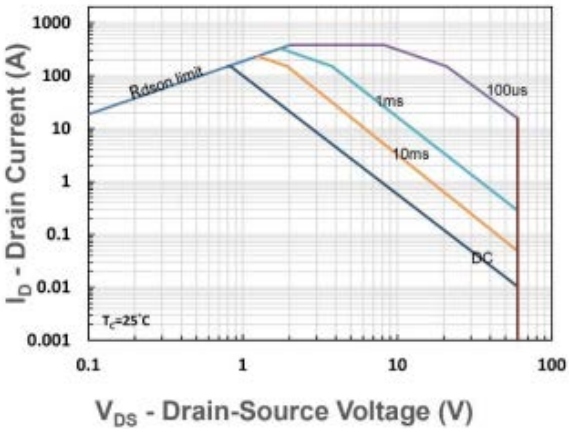


Figure 11. Safe Operating Area

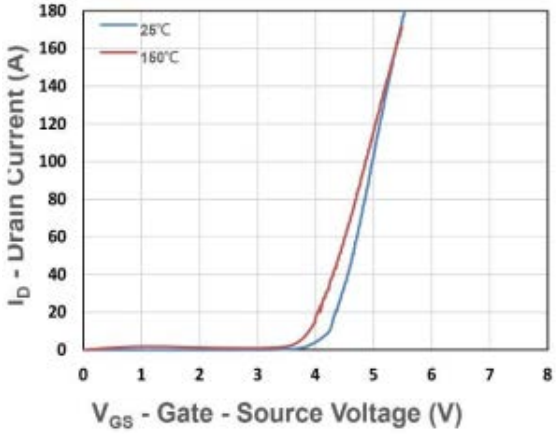


Figure 12. Transfer Characteristics

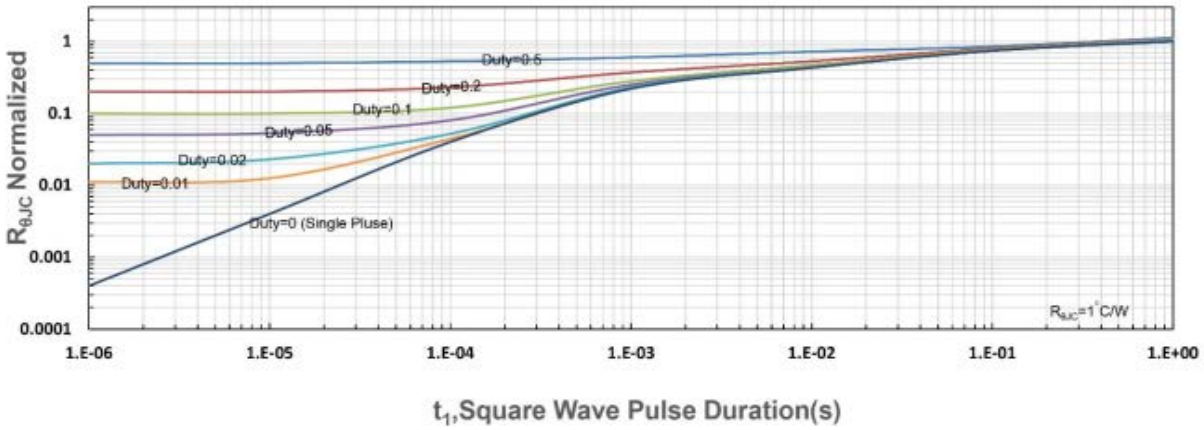
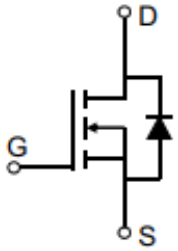
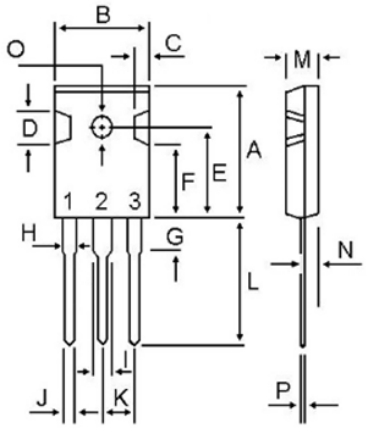


Figure 13. $R_{\theta jC}$ Transient Thermal Impedance

• Circuit diagram



• TO-247AB Package outlines : Dimensions in (mm)



DIM	MILLIMETERS	
	MIN	MAX
A	20.80	21.80
B	15.38	16.20
C	1.90	2.70
D	5.10	6.10
E	14.50	15.50
F	11.20	13.20
G	3.75	4.35
H	1.90	2.30
I	2.90	3.30
J	1.00	1.40
K	5.26	5.66
L	19.50	20.50
M	4.68	5.36
N	2.30	2.60
O	3.45	3.85
P	0.48	0.72

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