

40V_{DS}/±20V_{GS} N-Channel Enhancement Mode MOSFET

Features

- $V_{DS}=40V, I_D=60A$
- $R_{DS(ON)}=6m\Omega$ (TYP.) $V_{GS}=10V$
- $R_{DS(ON)}=12m\Omega$ (TYP.) $V_{GS}=4.5V$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

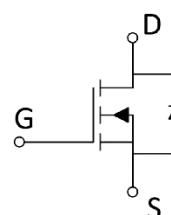
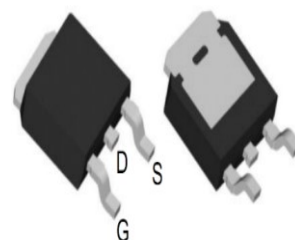
Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

Ordering Information

Device	package	Device Marking	Package Qty.
GT060N04K	TO-252	GT060N04K	2500/PCS

TO-252



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V _{GS} =0V)	V _{DS}	40	V
Gate-Source Voltage (V _{GS} =0V, static)	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	60	A
Continuous Drain Current (T _C =100°C)		45	A
Pulsed Drain Current	I _{DM}	180	A
Maximum Power Dissipation	P _D	60	W
Maximum Power Dissipation		0.4	W/°C
Single pulse avalanche energy	E _{as}	70	mJ
Operating, Storage Temperature Range	T _J , T _{STG}	-55~175	°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	-	2.5	-	°C/W

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
Gate -Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1	1.6	3	V
Drain-Source On-stage Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	5	9	mΩ
		V _{GS} =4.5V, I _D =20A	-	10	15	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15V$ $V_{GS}=0V$ $f=1MHz$	-	3400	-	pF
Output capacitance	C_{oss}		-	570	-	
Reverse transfer capacitance	C_{rss}		-	280	-	
Gate Resistance	R_g	$f=1MHz$	-	1.5	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15V$ $V_{GS}=10V$ $I_D=20A$	-	23	-	nC
Gate Source Charge	Q_{gs}		-	7	-	
Gate Drain Charge	Q_{gd}		-	4.5	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=15V$ $R_L=0.75\Omega$ $R_G=3\Omega$	-	10	-	ns
Rise time	t_r		-	8	-	
Turn-off delay Time	$t_{d(off)}$		-	30	-	
Fall time	t_f		-	5	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=1A$	-	0.85	1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=20A$ $dI/dt=500A/\mu s$	-	22	-	ns
Reverse Recovery Charge	Q_{rr}		-	11	-	nC

Electrical Characteristics Diagrames

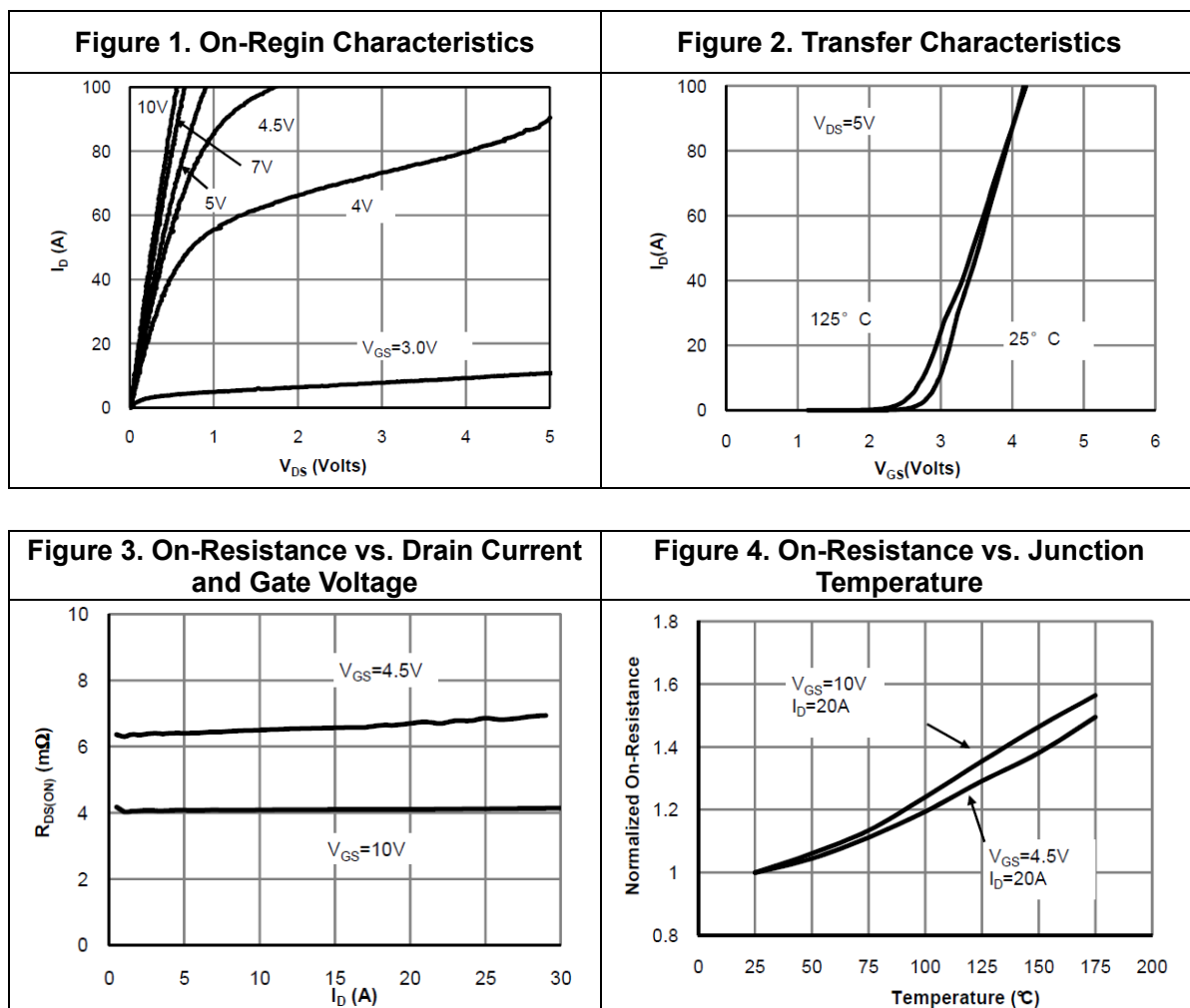


Figure 5. On-Resistance vs. Gate-Source Voltage

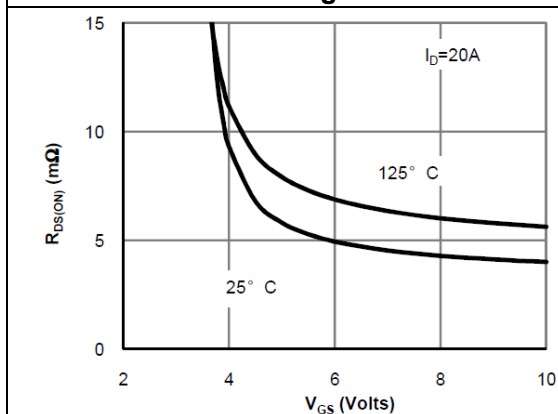


Figure 6. Body-Diode Characteristics

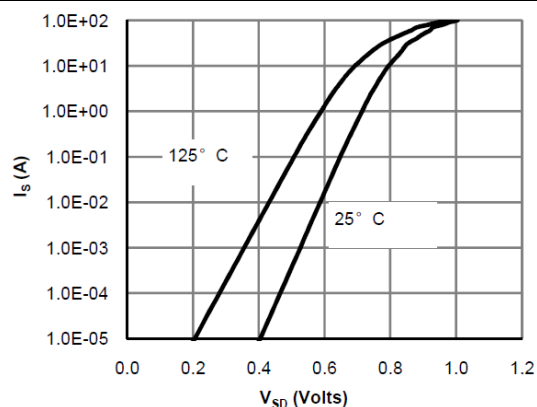


Figure 7. Gate-Charge Characteristics

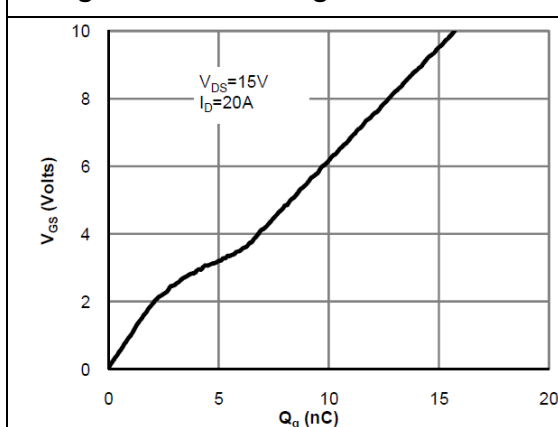


Figure 8. Capacitance Characteristics

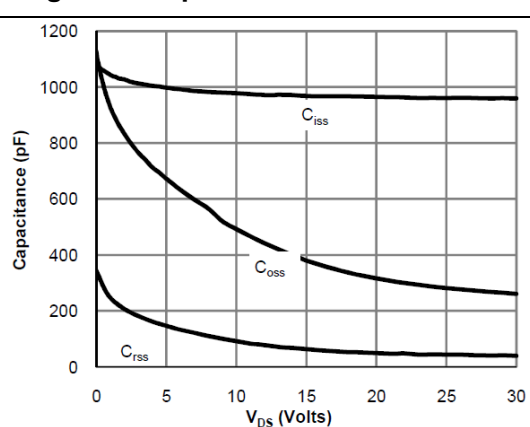


Figure 9. Maximum Forward Biased Safe Operating Area

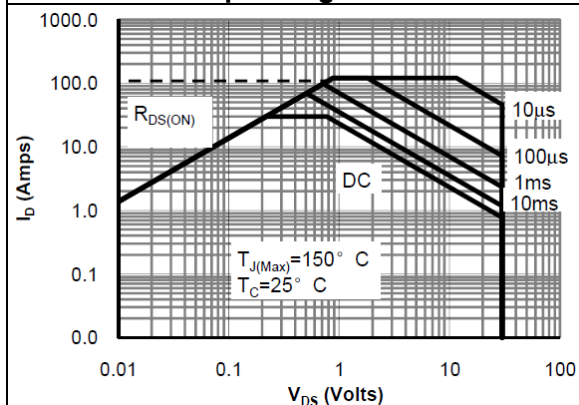


Figure 10. Single Pulse Power Rating Junction-to-Case

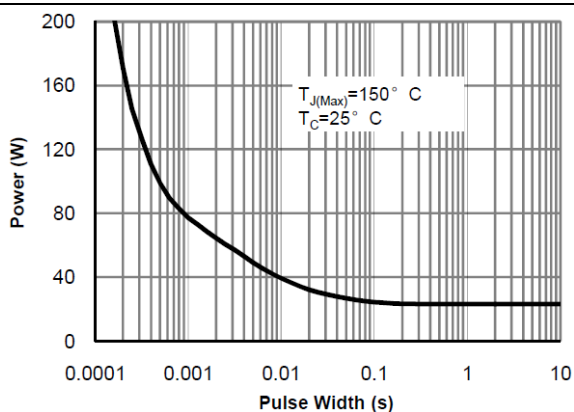
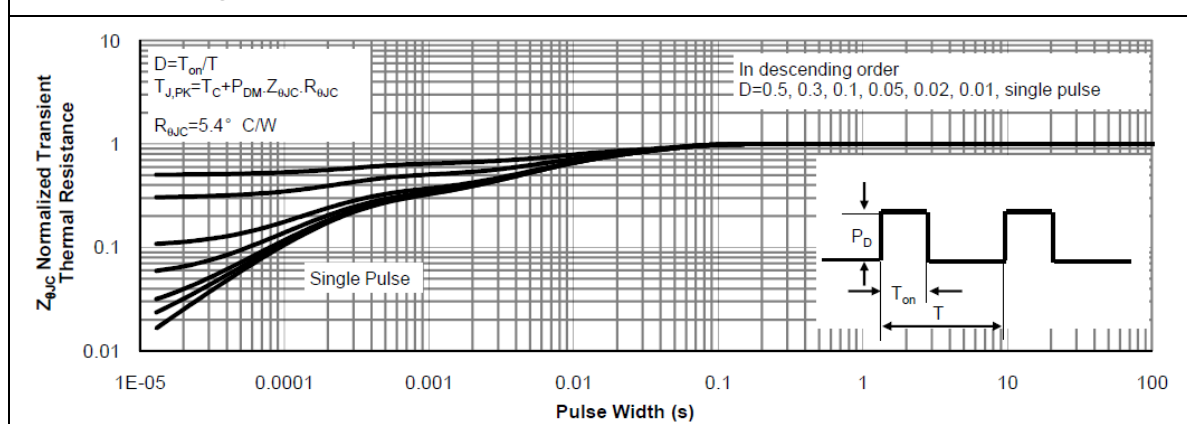
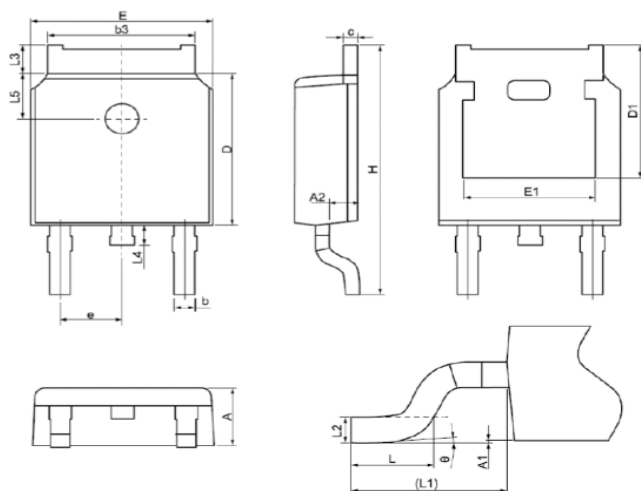


Figure 11. Normalized Maximum Transient Thermal Impedance



Physical Dimensions

TO-252



Symbol	Dimension (mm)			Symbol	Dimension (mm)		
	Min	Nom	Max		Min	Nom	Max
A	2.20	2.30	2.40	e	2.286(BSC)		
A1	0.00	-	0.20	H	9.40	10.10	10.50
A2	0.97	1.07	1.17	L	1.38	1.50	1.75
b	0.68	0.78	0.90	L1	2.90(REF)		
b3	5.20	5.33	5.50	L2	0.51(BSC)		
c	0.43	0.53	0.63	L3	0.88	-	1.28
D	5.98	6.10	6.22	L4	0.50	-	1.00
D1	5.30(REF)			L5	1.65	1.80	1.95
E	6.40	6.60	6.80	θ	0°	-	8°
E1	4.63	-	-	-	-	-	-

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