

Product Summary

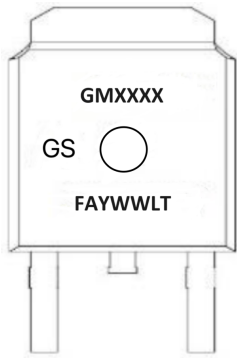
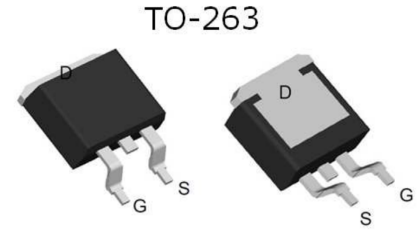
V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
40	2.2@ $V_{GS} = 10V$	120 ⁽¹⁾

Features

- Low $R_{DS(on)}$ SGT technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Application

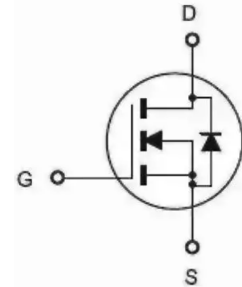
- DC/DC conversion
- Power switch
- Synchronous Rectification in SMPS



TO-263

NOTE:
 LOGO - GS
 GMXXXXX- Part number code
 F - Fab location code
 A - Assembly location code
 Y - Year code
 WW - Week code
 L&T - Assembly lot code

Equivalent circuit



Absolute Maximum Rating ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	40	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current	I_D	120	A
		85	
Pulsed drain current ⁽²⁾	$I_{D,pulse}$	480	A
Avalanche energy, single pulse ⁽³⁾	E_{AS}	400	mJ
Power dissipation	P_D	250	W
		145	
Operating junction and storage temperature range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Thermal Characteristic ($T_a=25^\circ\text{C}$)

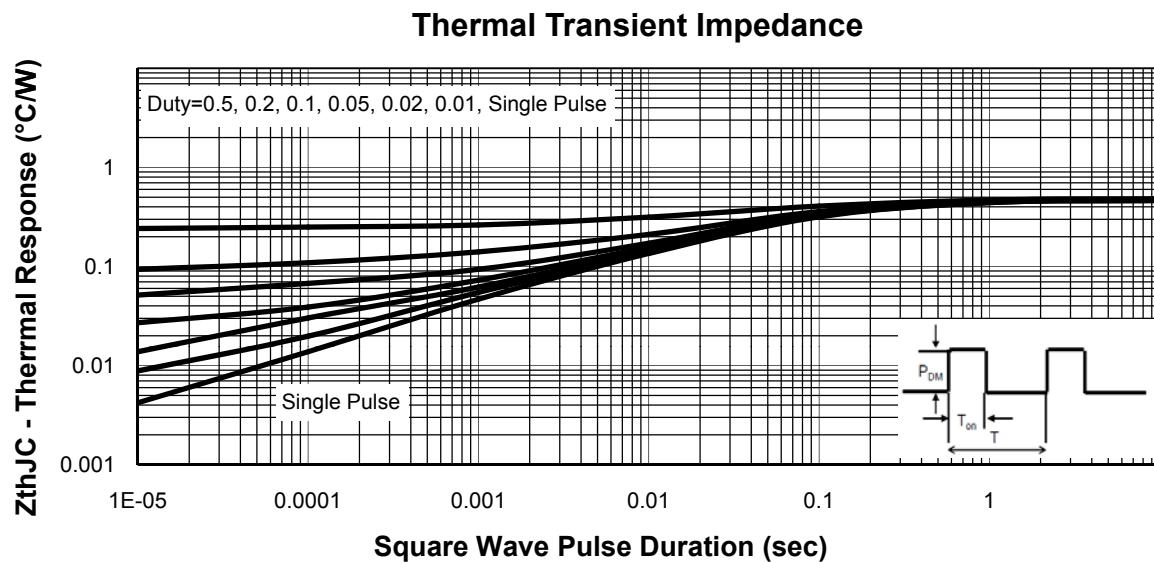
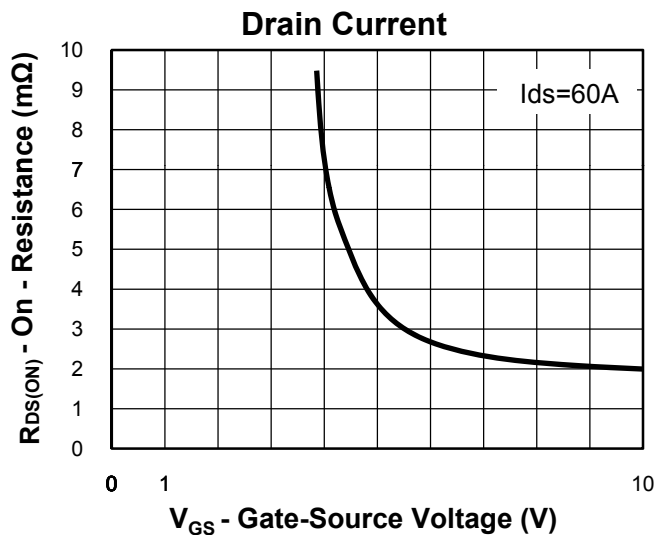
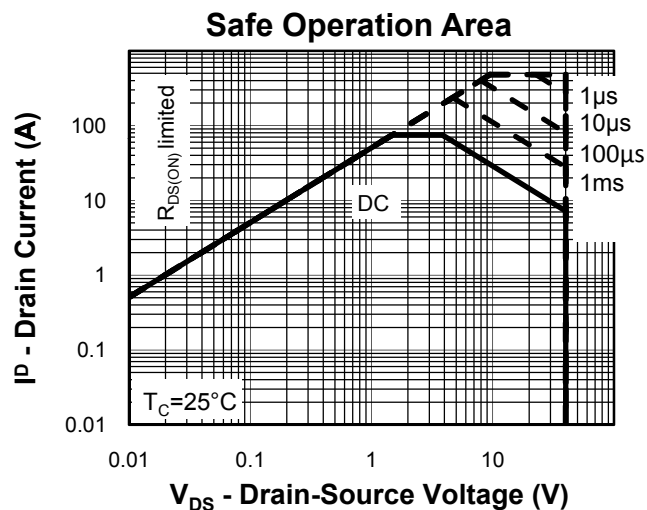
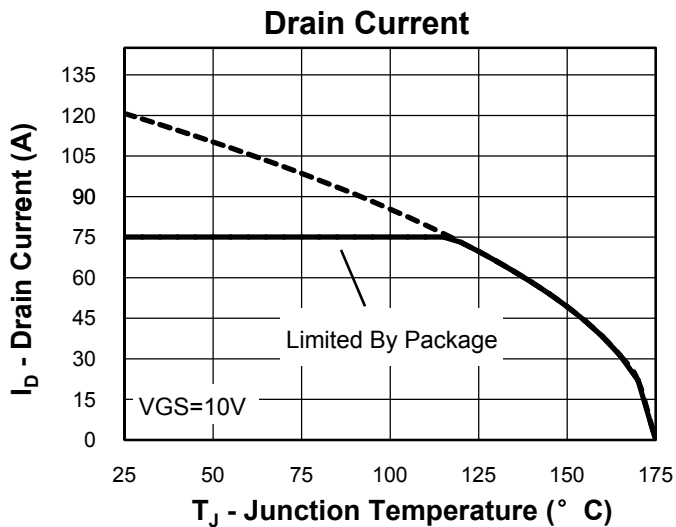
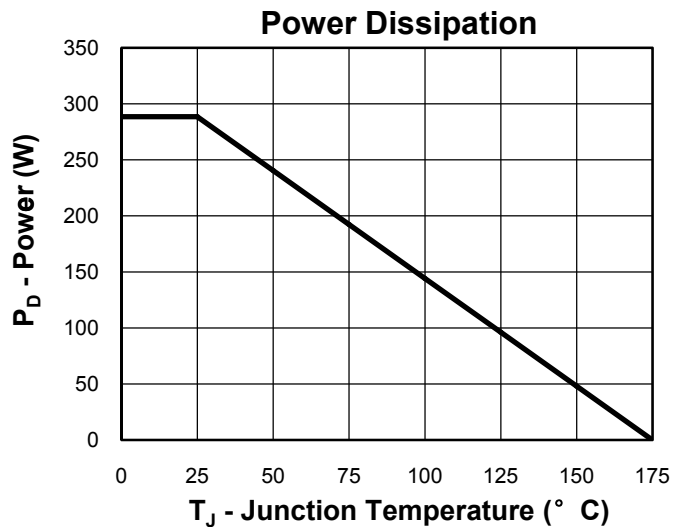
Parameter	Symbol	Max.	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	0.5	$^\circ\text{C/W}$
Thermal resistance, junction-to-ambient ⁽⁴⁾	$R_{\theta JA}$	40	

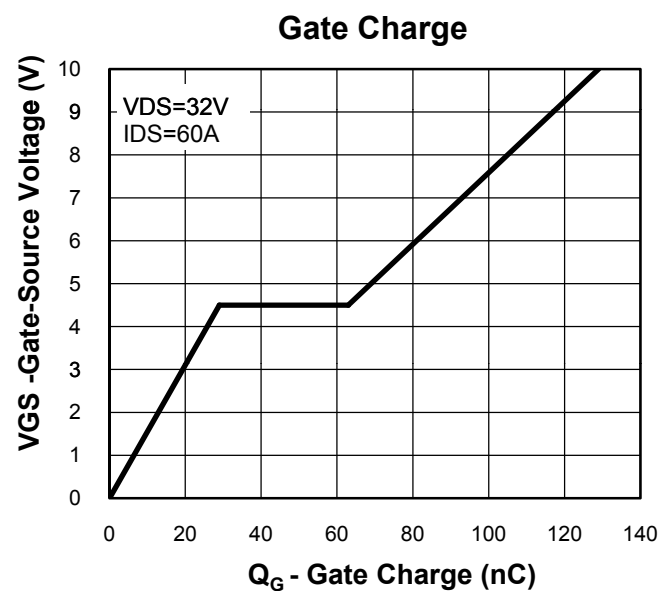
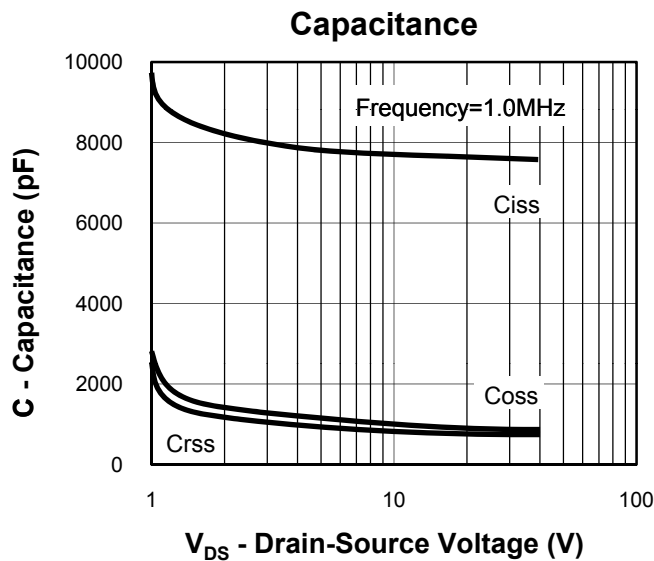
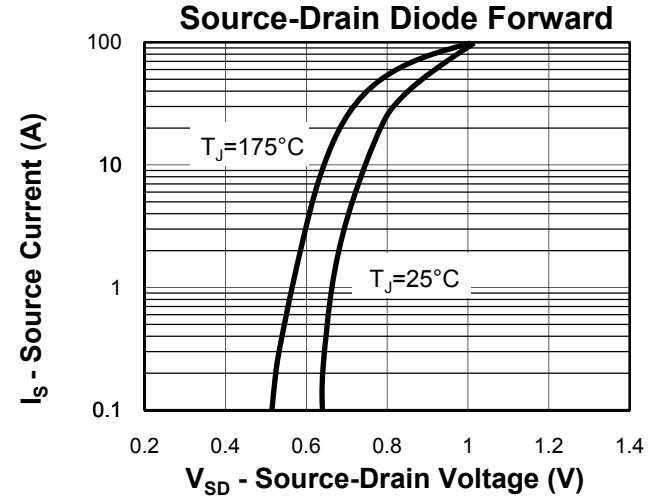
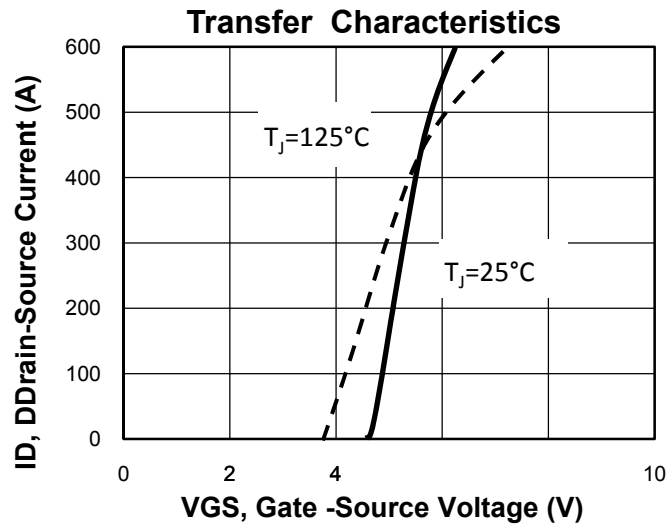
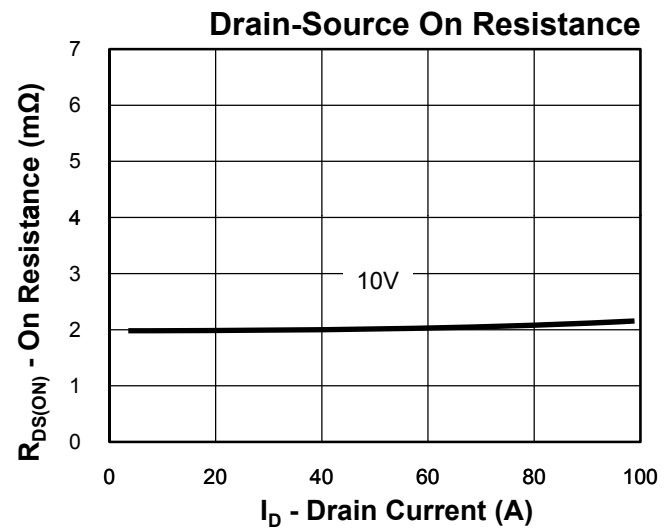
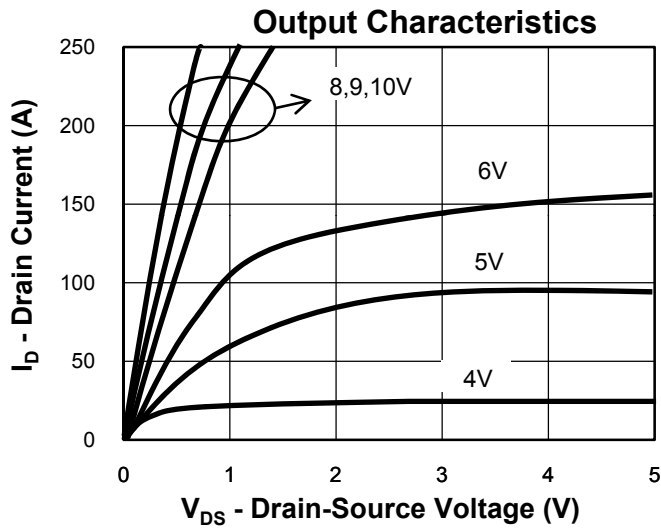
Electrical characteristics (Ta=25°C ± 3°C)

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter						
Drain to source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}$, $I_D = 1\text{ mA}$	40			V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$	2.0	3.0	4.0	V
Gate-body leakage	I_{GSS}	$V_{DS} = 0\text{ V}$, $V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 40\text{ V}$, $V_{GS} = 0\text{ V}$			1	μA
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 100\text{ A}$		1.95	2.2	m Ω
Forward transconductance ⁽⁵⁾	g_{fs}	$V_{DS} = 5\text{ V}$, $I_D = 100\text{ A}$		238		S
Gate resistance	R_g	$f = 1\text{ MHz}$		1.38		Ω
Dynamic ⁽⁵⁾						
Total gate charge	Q_g	$V_{DS} = 20\text{ V}$, $I_D = 20\text{ A}$, $V_{GS} = 10\text{ V}$		46		nC
Gate-source charge	Q_{gs}			17		
Gate-drain charge	Q_{gd}			8.1		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 20\text{ V}$, $I_D = 60\text{ A}$, $V_{GS} = 10\text{ V}$, $R_{GEN} = 6\text{ }\Omega$		28		ns
Rise time	t_r			37		
Turn-off delay time	$t_{d(off)}$			92		
Fall time	t_f			38		
Input capacitance	C_{iss}	$V_{DS} = 20\text{ V}$, $V_{GS} = 0\text{ V}$, $f = 1\text{ MHz}$		3170		pF
Output capacitance	C_{oss}			1610		
Reverse transfer capacitance	C_{rss}			68		
Reverse Diode Characteristics ⁽⁵⁾						
Diode forward voltage	V_{SD}	$V_{GS} = 0\text{ V}$, $I_F = 100\text{ A}$		0.9	1.2	V
Reverse recovery time	t_{rr}	$V_{DS} = 20\text{ V}$, $I_F = 50\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$		49		ns
Reverse recovery charge	Q_{rr}			52		nC

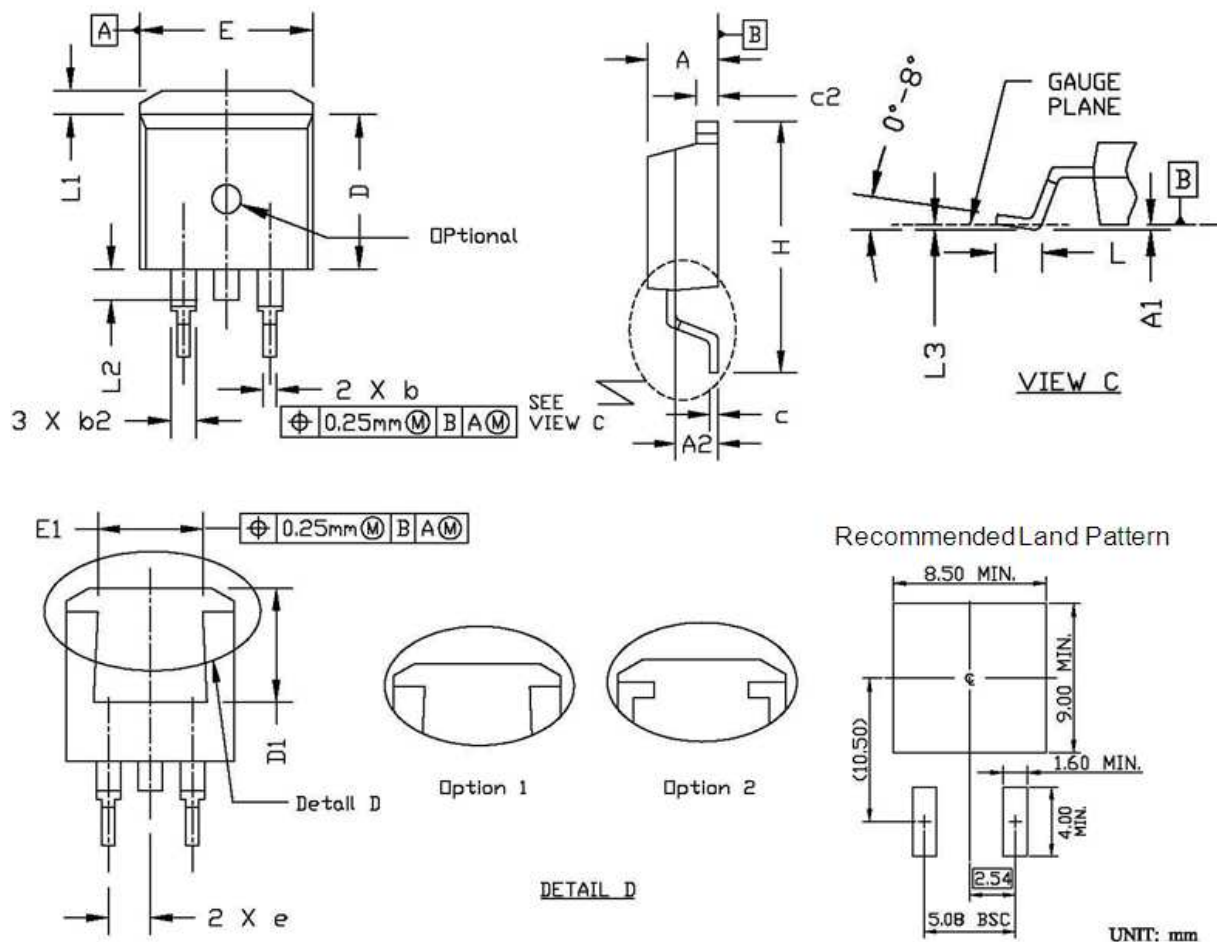
Notes

- (1) Limited by maximum junction temperature..
- (2) Pulse width limited by maximum junction temperature.
- (3) $V_{DS} = 20\text{ V}, V_{GS} = 10\text{ V}, L = 0.5\text{ mH}$.
- (4) $R_{\theta JA}$ is determined with the device mounted on a 1 in² pad 2 oz copper pad on a 1.5x1.5 in. board of FR-4 material.
- (5) Guaranteed by design, not subject to production testing.

Electrical characteristics diagrams




Package outline dimensions:TO-263



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.86	0.169	0.191
A1	0.00	0.25	0.000	0.010
A2	2.34	2.79	0.092	0.110
b	0.68	0.94	0.027	0.037
b2	1.15	1.35	0.045	0.053
c	0.33	0.65	0.013	0.026
c2	1.17	1.40	0.046	0.055
D	8.38	9.45	0.330	0.372
D1	6.90	8.17	0.272	0.322
e	2.54 BSC.		0.100 BSC.	
E	9.78	10.50	0.385	0.413
E1	6.50	8.60	0.256	0.339
H	14.61	15.88	0.575	0.625
L	2.24	3.00	0.088	0.118
L1	0.70	1.60	0.028	0.063
L2	1.00	1.78	0.039	0.070
L3	0.00	0.25	0.000	0.010

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