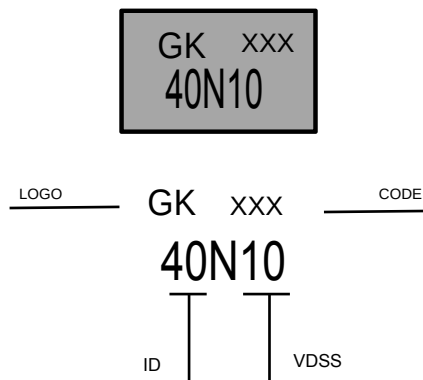
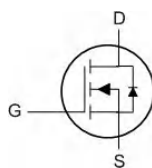


FEATURES

Super Low Gate Charge
Green Device Available
Excellent Cdv/dt effect decline
Advanced high cell density Trench
technology

V_{DS} 100 V
 I_D 40 A
 $R_{DS(ON)}$ 20 m Ω



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V ¹	40	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V ¹	20	A
I_{DM}	Pulsed Drain Current ²	80	A
EAS	Single Pulse Avalanche Energy ³	40	mJ
I_{AS}	Avalanche Current	30	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation ³	43.7	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	50	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	3.0	$^\circ\text{C/W}$

Electrical characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V
Gate-body Leakage current		I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
Zero Gate Voltage Drain Current	$T_J=25^{\circ}C$	I_{DSS}	$V_{DS}=100V, V_{GS} = 0V$	-	-	1	μA
	$T_J=100^{\circ}C$			-	-	100	
Gate-Threshold Voltage		$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		3.0	V
Drain-Source on-Resistance ⁴		$R_{DS(on)}$	$V_{GS} = 10V, I_D = 8 A$	-	20	28	mΩ
			$V_{GS} = 4.5V, I_D = 4 A$	-	23	31	
Forward Transconductance ⁴		g_{fs}	$V_{DS}=5V, I_D=5A$	-	12	-	S
Dynamic Characteristics ⁵							
Input Capacitance		C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$	-	822	-	pF
Output Capacitance		C_{oss}		-	320	-	
Reverse Transfer Capacitance		C_{rss}		-	23	-	
Gate Resistance		R_g	$f = 1MHz$	-	1.3	-	Ω
Switching Characteristics ⁵							
Total Gate Charge		Q_g	$V_{GS} = 10V, V_{DS} = 50V, I_D=5A$	-	40.6	-	nC
Gate-Source Charge		Q_{gs}		-	8	-	
Gate-Drain Charge		Q_{gd}		-	6.7	-	
Turn-On Delay Time		$t_{d(on)}$	$V_{GS}=10V, V_{DD}=50V, R_G = 3\Omega, I_D= 5A$	-	8.7	-	ns
Rise Time		t_r		-	41	-	
Turn-Off Delay Time		$t_{d(off)}$		-	40	-	
Fall Time		t_f		-	32	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V_{SD}	$I_S = 1A, V_{GS} = 0V$	-	-	1.2	V
Continuous Source Current	$T_C=25^{\circ}C$	I_S	-	-	-	40	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=8A$
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

RATING AND CHARACTERISTIC CURVES

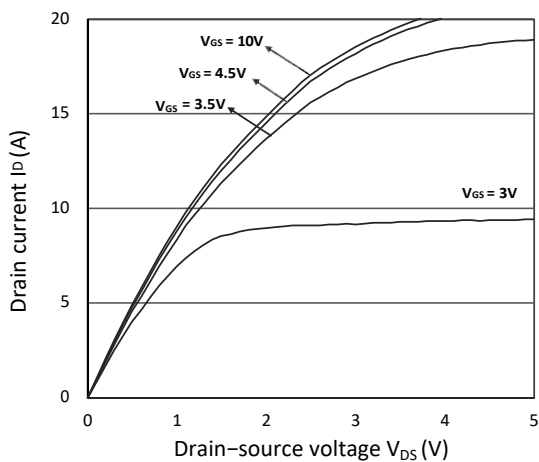


Figure 1. Output Characteristics

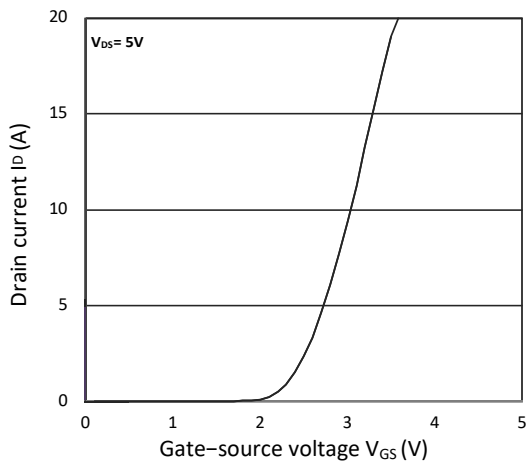


Figure 2. Transfer Characteristics

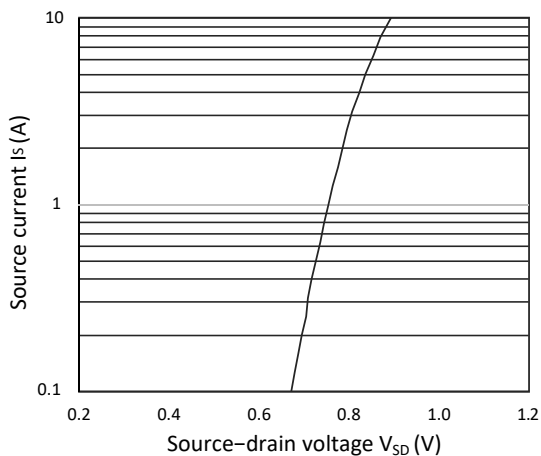


Figure 3. Forward Characteristics of Reverse

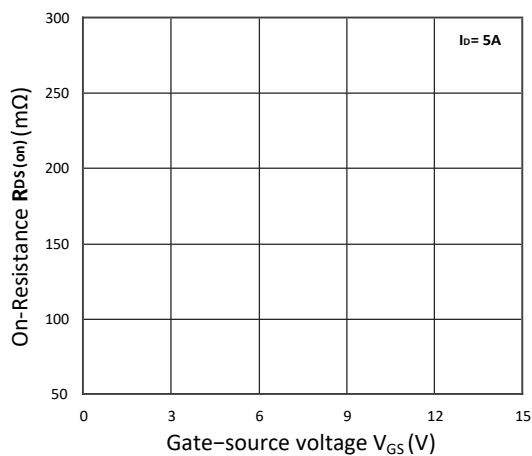


Figure 4. $R_{DS(on)}$ vs. V_{GS}

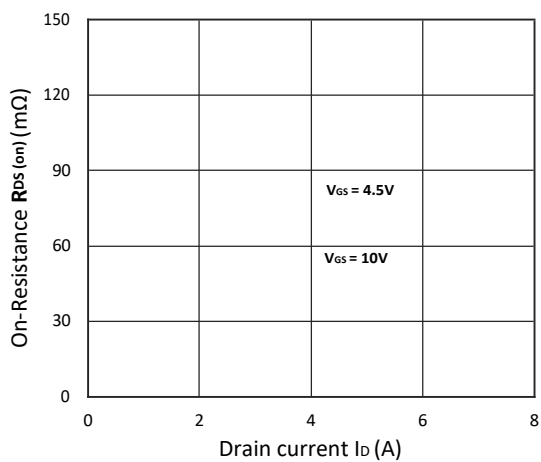


Figure 5 $R_{DS(on)}$ vs I_D

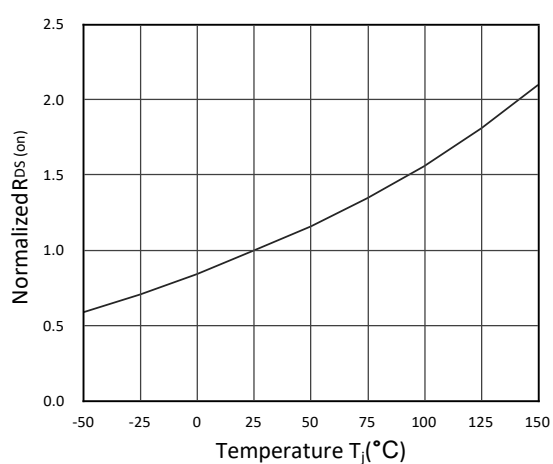


Figure 6 Normalized $R_{DS(on)}$ vs Temperature

RATING AND CHARACTERISTIC CURVES

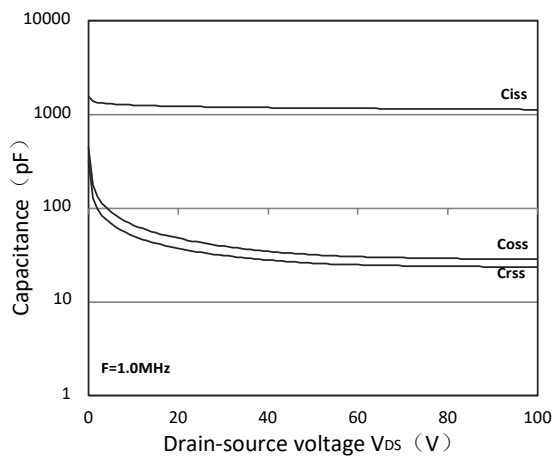


Figure 7. Capacitance Characteristics

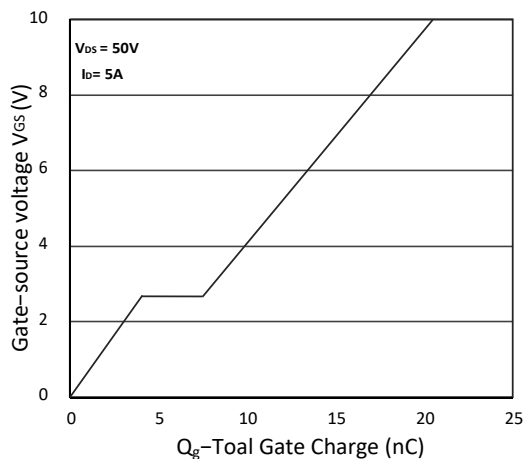


Figure 8. Gate Charge Characteristics

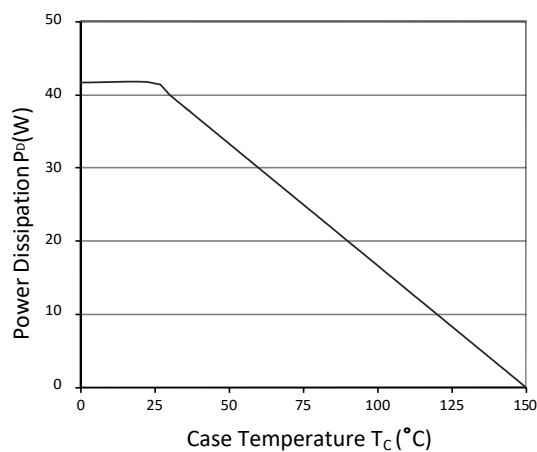


Figure 9. Power Dissipation

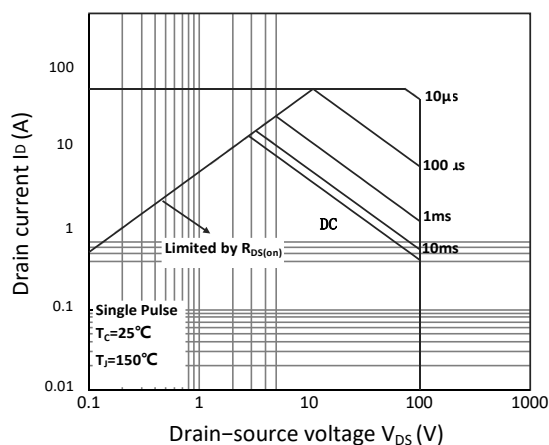


Figure 10. Safe Operating Area

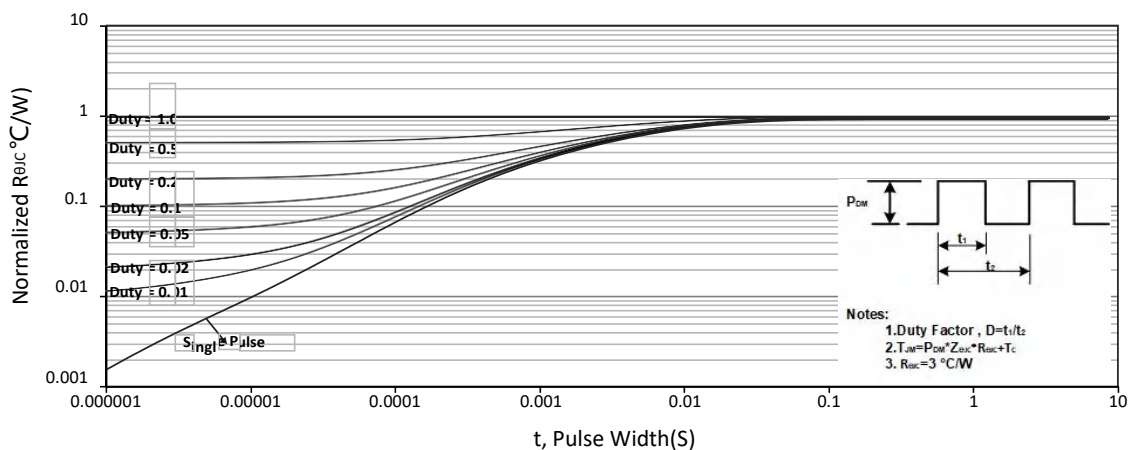
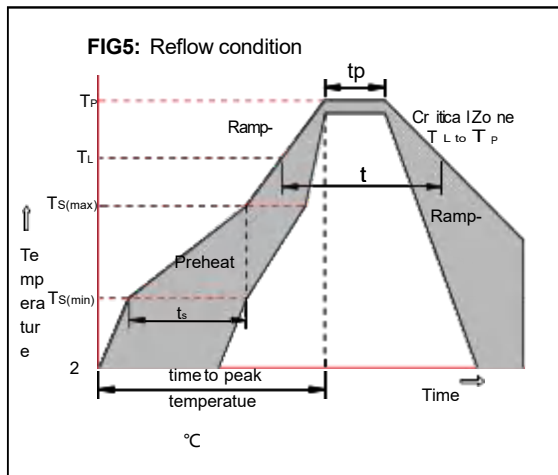


Figure 11. Normalized Maximum Transient Thermal Impedance

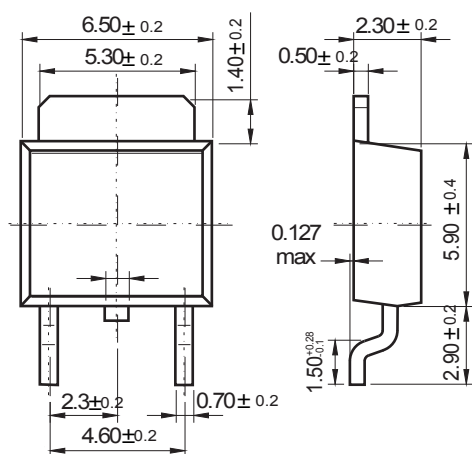
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217 °C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C

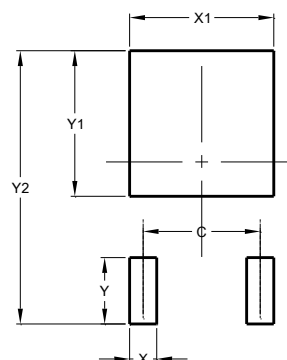


Package Dimensions & Suggested Pad Layout

TO-252

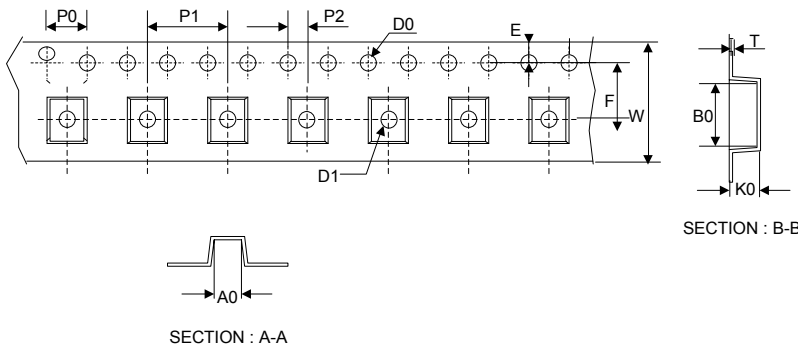
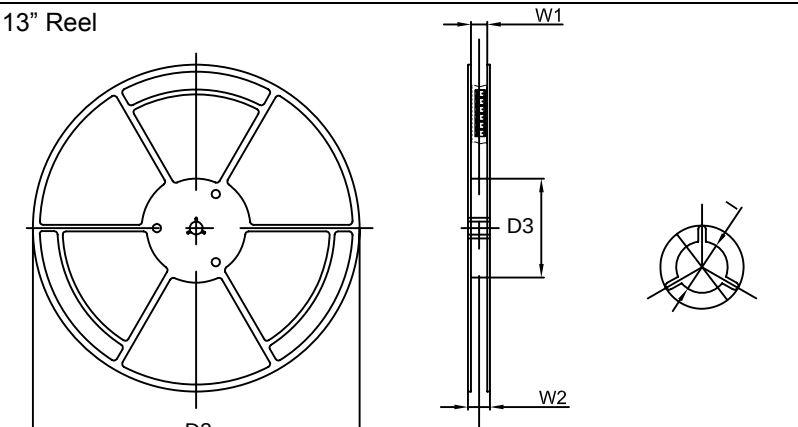


Dimensions in inches and (millimeters)



Dimensions	Value (in mm)
C	4.55
X	1.50
X1	5.80
Y	2.70
Y1	6.00
Y2	10.90

Tape & reel specification

Tape		Symbol	Dimension (mm)
		P0	4.00±0.20
		P1	8.00±0.20
		P2	2.00±0.20
		D0	1.55±0.15
		D1	1.55±0.20
		E	1.75±0.20
		F	7.50±0.20
		W	16.00±0.20
		A0	7.10±0.20
		B0	10.50±0.20
		K0	2.70±0.20
		T	0.30±0.10
		D2	330.0±5.0
		D3	100.0±4.0
		W1	20.0±5.0
13" Reel		W2	25.0±5.0
		I	13.0±2.0
		Quantity: 2500PCS	